

Appendix G - Framework Resource Management Plan**TABLE OF CONTENTS**

1	INTRODUCTION.....	1
1.1	The Adaptive Management Strategy	2
1.2	Management and Monitoring Implementation Schedule.....	2
1.3	Area-Specific Management Directives (ASMDs)	3
1.4	Interim Management	4
2	PLAN-WIDE STEWARDSHIP GUIDELINES	5
2.1	Baseline Inventory of Management Needs	5
2.2	Siting Criteria.....	5
2.3	Fire Management	5
2.4	Recreation and Public Access	6
2.5	Illegal Camping.....	6
2.6	Erosion Control	7
2.7	Landscaping Restrictions	8
2.8	Fencing, Signs, and Lighting	9
2.9	Law Enforcement.....	10
2.10	Native American Traditional Use Areas	11
2.11	Compliance Monitoring.....	11
3	PLAN WIDE MANAGEMENT GUIDELINES	12
3.1	Habitat Restoration	12
3.2	Species Re-introduction	14
3.3	Non-native Invasive Species Control.....	15
3.4	Vegetation Management	17
4	HABITAT SPECIFIC MANAGEMENT GUIDELINES	18
4.1	Riparian, Marsh and Wet Meadow Habitat	18
4.2	Coastal Sage Scrub, Chaparral, and Grassland Habitat	21
4.3	Oak Woodlands and Coniferous Forest	24
4.4	Vernal Pools.....	26
5	SPECIES-SPECIFIC MANGEMENT GUIDELINES	27
6	MANAGEMENT GUIDELINES WITHIN BASELINE PRESERVE AREAS	28

6.1	San Elijo Lagoon Ecological Reserve.....	28
6.2	Ramona Grasslands Preserve.....	29
6.3	Other Existing Open Space Preserves.....	29
7	BIOLOGICAL AND CULTURAL RESOURCE MONITORING	30
7.1	Species Monitoring	30
7.1.1	Baseline Species Distribution Surveys	31
7.1.2	Trend Monitoring.....	31
7.1.3	Status Monitoring	32
7.2	Vegetation Community Monitoring.....	32
7.3	Wildlife Corridor Management and Monitoring.....	33
7.4	Regional Monitoring.....	33
7.5	Minimizing Transport of Biological Materials	34
8	PLANNING SEGMENTS.....	35
	Overview.....	35
	CORE AREAS	37
8.1	DeLuz Core (1)	37
	Area Description	37
	Conservation Goals.....	38
8.2	Santa Margarita Core (2)	38
	Area Description	38
	Conservation Goals.....	39
8.3	Mount Olympus Core (3).....	39
	Area Description	39
	Conservation Goals.....	40
8.4	Pala Core (4)	41
	Area Description	41
	Conservation Goals.....	42
8.5	Palomar Mountain Foothill Core (5).....	42
	Area Description	42
	Conservation Goals.....	43
8.6	Hellhole Canyon Core (6).....	44
	Area Description	44
	Conservation Goals.....	45
8.7	Guejito Creek Core (7).....	45
	Area Description	45

	Conservation Goals	46
8.8	Daley Ranch – Lake Wohlford Core (8).....	46
	Area Description	46
	Conservation Goals	47
8.9	San Marcos – Merriam Mountains Core (9).....	48
	Area Description	48
	Conservation Goals	49
8.10	Elfin Forest Core (10)	49
	Area Description	49
	Conservation Goals	50
8.11	Harmony Grove Core (11).....	51
	Area Description	51
	Conservation Goals	52
8.12	Mount Woodson Core (12).....	52
	Area Description	52
	Conservation Goals	53
8.13	Ramona Grasslands Core and Linkage (13)	53
	Area Description	53
	Conservation Goals	54
8.14	San Pasqual Valley Core (14).....	55
	Area Description	55
	Conservation Goals	55
8.15	Eastern Ramona Core (15).....	55
	Area Description	55
	Conservation Goals	56
	SPECIAL AREAS.....	57
8.16	San Elijo – Rancho Santa Fe Coastal Areas (16).....	57
	Area Description	57
	Conservation Goals	58
8.17	Downtown Ramona Vernal Pool Complex (17).....	58
	Area Description	58
	Conservation Goals	59
	LINKAGES.....	60
8.18	Escondido - Temecula Linkage (18).....	60
	Area Description	60
	Conservation Goals	61
8.19	Lower San Luis Rey River Linkage (19).....	61

	Area Description	61
	Conservation Goals	62
8.20	Upper San Luis Rey River Linkage (20)	62
	Area Description	62
	Conservation Goals	63
8.21	Keys Creek Linkage (21)	64
	Area Description	64
	Conservation Goals	65
8.22	Moosa Canyon Linkage (22)	65
	Area Description	65
	Conservation Goals	66
8.23	Ramona – Blue Sky Linkage (23).....	66
	Area Description	66
	Conservation Goals	67
REFERENCES.....		68

1 INTRODUCTION

The Multiple Species Conservation Program (MSCP) North County Plan (Plan) ensures the long-term survival of sensitive plant and animal species and protects native habitats. Plan Volumes I and II and the associated Implementation Agreement (IA) establish conditions under which the County will receive from the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG; Wildlife Agencies) certain long-term Take Authorizations under the federal Endangered Species Act (ESA) and California Natural Community Conservation Planning Act (NCCPA).

The habitat and cultural resources expected to be conserved by the Plan will make an important contribution to the conservation in southern California by conserving the region's unique biodiversity, cultural resources, and maintaining populations of sensitive species. This Plan will also enhance the region's quality of life by providing the residents of San Diego County (County) with passive recreational and educational opportunities as well as a functioning natural environment in which to live. To succeed in these goals, the Plan requires active management and land use restrictions on preserved lands that respond to the special interface between developed lands and open space.

Existing legal land uses within and adjacent to the preserve are expressly allowed by the Plan, and existing ownerships will be maintained unless lands are otherwise obtained by public or private conservation entities through purchase from willing sellers, dedication, or donation. The County will review new public facilities for consistency with the Plan to maximize public safety and minimize management concerns and biological impacts.

This Framework Resource Management Plan (FRMP) provides management and monitoring guidelines that will be used to develop Area-Specific Management Directives (ASMDs) within specific preserve areas and will guide interim management of preserve lands until ASMDs can be developed. ASMDs will generally be developed upon assembly of 300 acres of preserved land within a planning segment. ASMDs will ensure that preserved lands are managed for the long-term conservation of biological and cultural resources and that direct and indirect impacts to sensitive habitats, covered species, and cultural resources are reduced or eliminated through activity restrictions, project design, and adaptive management practices.

Specific conservation actions that will be performed on preserve lands fall into three categories: land stewardship, adaptive management actions, and biological monitoring (Table 1). In general, land stewardship consists of the activities necessary for maintaining the integrity (i.e., functional ecosystem and protected resources) of preserved lands. Adaptive management actions include activities that are designed to benefit specific ecological features (e.g., certain species, vegetation communities or ecological processes) based upon information that has been gained through casual observations or scientific monitoring. Biological monitoring refers to focused assessments of species or vegetation communities. In this document, these three categories are cumulatively referred to as resource management. Chapter 9 of the Plan describes the responsible entity for each of these management categories.

Table 1. Examples of Land Stewardship, Adaptive Management, and Biological Monitoring

LANDOWNER RESPONSIBILITIES (STEWARDSHIP)	
Public access control	Fire safety
Fencing and gates	Erosion control
Access road maintenance	Hydrological management
Trail maintenance	Landscaping
Signage and lighting	Trash and litter removal
Noise	Public education (for stewardship)
Invasive Plant Removal	Biological Inventories
PUBLIC AGENCY RESPONSIBILITIES (ADAPTIVE MANAGEMENT AND BIOLOGICAL MONITORING)	
Habitat restoration	Archeological & cultural resources
Herbicide use	Species re-introductions
Predator control	Removal of invasive species
Fire regime	Public education (for adaptive management)
Landslides	Species monitoring
Habitat monitoring	Wildlife corridor monitoring
Scientific studies	

1.1 The Adaptive Management Strategy

Adaptive management can be defined as the use of new information gathered from the monitoring program or from other sources to adjust management strategies and practices to assist in providing for the conservation of covered species (California Fish & Game Code §2805(a)). This FRMP incorporates adaptive management in several ways. Biological monitoring (particularly trend monitoring) as described in Section 7 will provide new information regarding the relationships between population trends, habitat conditions, and anthropogenic impacts. Improved understanding of these relationships will be valuable for adapting management actions so as to better conserve species. Sections 3-5, make specific recommendations for potential adaptive management responses to different events and conditions that may arise.

1.2 Management and Monitoring Implementation Schedule

The following describes a two-phase approach to managing and monitoring preserves. Other sections of this document, as cited below, will guide the specific actions related to this schedule. Two established preserve areas have working resource management programs (Section 5) and will not be subject to this schedule.

PHASE I - For existing preserve areas, Phase I will begin simultaneously with the adoption of the Plan. For land preserved after the Plan's formal adoption, Phase I will generally begin once 300 or more contiguous acres of preserved land are assembled. Phase I will have an expected duration of five years and will consist of the following:

- **Interim Management (Section 1.4).**

Prior to the finalization of ASMDs, stewardship activities will be conducted.

- **Inventory of Management Needs on Preserve Lands (Section 2.1).**

Preserves will be surveyed for both biological and cultural resources to identify management concerns such as: fire risk, signage/security, habitat restoration, erosion, and public use. Portions of this inventory will be incidental to the “baseline species distribution surveys” described below.

- **Baseline Species Distribution Surveys (Section 7.1.1).**

All vegetation communities will be sampled in an effort to identify the initial distribution of target species. The spatial extent of target species will be mapped in geographic information system (GIS) to allow for future comparison of species’ distributions.

- **Develop Area-Specific Management Directives (ASMDs) (Section 1.3).**

Based upon the resource management needs of preserve areas, as identified during the Inventory of Management Needs and Baseline Species Distribution Surveys, ASMDs will be developed. ASMDs will provide site-specific methods for long-term management and monitoring of preserves.

- **Compliance Monitoring (Section 2.10).**

Compliance monitoring will begin immediately after adoption of the Plan and is not specific to individual preserves. Compliance monitoring will continue throughout the duration of the Take Permit and will be implemented to ensure that the ratio of preserved to developed lands meets the goals of the Plan and that resource management activities are occurring as required under the Plan. This information will be reported to the Wildlife Agencies annually.

PHASE II - Phase II will begin after baseline inventories are complete and ASMDs are developed. Phase II involves the ongoing resource management of preserve lands based upon ASMDs as well as compliance monitoring.

1.3 Area-Specific Management Directives (ASMDs)

ASMDs will guide the management and monitoring of preserve areas and will be developed by applying the guidelines in the rest of this document as well as information gained during baseline surveys of species distribution, cultural resources, and management needs. The Wildlife agencies will have the opportunity to review and approve/concur with all ASMDs developed by the County. The following outline specifies the triggers that will initiate the development, revision, or review of an ASMD.

- **ASMDs will be developed in response to any of the following circumstances:**

- 1) 300 or more acres of preserve area have been established within a planning segment (Section 8).

- 2) The presence of a significant and preserved rare, narrow endemic population (this will become part of the “preserve” within the Plan area).
 - 3) A preserve area has reached a maximum potential size due to limitations imposed by surrounding land use (e.g., a preserve area of seven contiguous acres is established and can not be expanded because the surrounding land is developed). ASMD development due to this circumstance will be at the County’s discretion, primarily depending upon the ecological importance of the preserve and/or the ability to annex this area into an existing ASMD.
 - 4) A preserve area is part of a key linkage or corridor.
- **ASMDs will be revised in response to any one of the following circumstances (The revisions will adequately address any new land management considerations. This may entail extensive revisions or a short attachment to an ASMD):**
 - 1) Any additions of land that significantly alter management actions (e.g., new species or vegetation communities are added, new access routes are available, or new cultural resources are identified).
 - 2) A rare, narrow endemic species is present on land added to a preserve area.
 - 3) Known conditions within a preserve area have significantly changed due to new information (e.g., monitoring/research results) or unforeseen changes in the landscape (e.g., disease, or damage to cultural resources).
 - 4) Geographically separate preserves become contiguous, necessitating that multiple ASMDs be merged into one comprehensive document.
 - **ASMDs will be reviewed periodically in the context of monitoring results to ensure that areas continue to maintain natural communities in a manner compatible with the goals of this Plan. Review will occur when:**
 - 1) Trend data are available for an ASMD. Trend data should be available 5-15 years after initial surveys are conducted in association with the development of the ASMDs (depending on frequency of monitoring).
 - 2) A single monitoring effort shows a catastrophic decline in species of concern.
 - 3) Catastrophic changes occur to the landscape (e.g., catastrophic wildfire, large-scale invasive species intrusion).

1.4 Interim Management

As discussed above, ASMDs will generally be developed within five years of preserve designation. For County preserves without an ASMD, the County will carry out stewardship responsibilities consistent with this FRMP. New uses, (i.e., new trails or recreational facilities) will not begin until baseline biological and management needs surveys have been conducted.

2 PLAN-WIDE STEWARDSHIP GUIDELINES

The following discussion will guide the development of ASMDs in many geographic areas. In addition to these guidelines, habitat and species-specific resource management guidelines have been developed (Sections 3, 4, 5, 8) to further direct ASMD development within specific areas.

2.1 Baseline Inventory of Management Needs

A baseline inventory of management needs will be conducted on all preserve areas, generally before they are open to the public. For efficiency this effort may be coordinated with the baseline species distribution surveys (Section 7.1.1). The inventory will consist of a visual inspection to identify and document land conditions that warrant management (e.g., fencing, non-native invasive species, etc.). This inventory will also identify existing trails in preserve areas. Other portions of Section 2 provide an overview of land conditions that should be considered during the inventory. Long-term management needs will be discussed in ASMDs, while more urgent management needs will be immediately addressed with management actions.

2.2 Siting Criteria (*Section Under Development*)

Appropriate recreational, scientific, and resource management activities/facilities are allowable on Preserve lands and are authorized for incidental take under this Program. This applies to both existing preserves and lands that may be acquired for conservation purposes in the future. Examples of such facilities include but are not limited to: staging areas and associated amenities, information kiosks, signage, benches, and trails. Such facilities are anticipated as part of this program and are authorized for incidental take of covered species without further review from the Wildlife Agencies provided that all the following criteria are met:

- Disturbance is directly related to providing for a compatible public use of preserved lands – a multi-use trail, bird-watching, environmental education, and other passive recreational opportunities;
- Use of existing disturbed vegetation communities are considered in project design;
- Trails are designed and maintained as described below (Section 2.4); and
- Impacts conform to the conditions for coverage of all relevant covered species to the maximum extent practicable.

2.3 Fire Management

Fuel management zones around the edge of preserves may be necessary in some cases to protect existing homes. Maintenance of vegetation within these zones is considered part of the necessary stewardship of preserves. In some cases arrangements may be made to allow or require homeowners to perform this work. However, unsupervised public clearing of habitat in the preserve will not be allowed. Permanent markers may be established to delineate the limits of fuel management zones.

ASMDs will describe fire management actions that will be conducted within preserves for fire safety purposes. The San Diego County Fire Chief's Wildland/Urban Interface Task Force has prepared county-wide brush management guidelines in concert with the Wildlife Agencies

(County of San Diego, 2009). Fire Management for ecosystem and species health will also be considered in the development of ASMDs (See section 3.4).

2.4 Recreation and Public Access

Public access is appropriate in selected areas of preserves to allow entry for passive recreational purposes and to promote understanding and appreciation of the natural and cultural resources. Excessive or uncontrolled access, however, can result in habitat degradation through trampling and erosion (e.g., along trails), disruption of breeding and other critical wildlife functions at certain times of the year, and vandalism to cultural resources.

Passive recreational activities (e.g., hiking, bird watching, horse riding, bicycling) are anticipated within preserves and are generally compatible with Plan conservation goals. In general, passive activities only pose a significant threat to biological or cultural resources when the level of recreational use becomes too intense or is in close proximity to species that are extraordinarily sensitive to human activity.

Recreational off-road vehicle use will be prohibited in preserve areas. Adverse impacts of off-road vehicle use include damage to archaeology sites, reductions in air quality due to automotive exhaust and creation of dust, soil erosion and sedimentation into local waters, noise, and habitat degradation. Disturbance from off-road vehicles can also disrupt breeding activities. Where impacts will not be significant, off-road vehicle used for preserve management activities (e.g., patrolling, monitoring, etc.) can be appropriate.

Recreational use of the preserved areas should be consistent with the protection and enhancement of biological and cultural resources. Existing recreational facilities should be managed to promote the maintenance of habitat value surrounding these facilities and reduce impacts to cultural resources. Anticipated active recreation projects should be accommodated outside the preserve on land not required to meet Covered Species' habitat needs.

2.5 Illegal Camping

Transients and migrant agricultural workers sometimes maintain shelters and living areas illegally within preserve areas. Such living areas have a detrimental effect on cultural resources; native vegetation and wildlife, including an increase in refuse, poaching of wildlife, increased fires, and raw sewage disposal that can pollute water resources. The volume of refuse generated attracts black rats that impact native rodent populations and argentine ants, which contribute to the decline of native ant, and San Diego horned lizard populations. Although scattered living areas will be difficult to control, villages of transients are incompatible with the preserve and should be removed.

While the impacts to the habitat are significant and incompatible with preserve goals, the social, economic and ethical issues regarding how best to solve this problem are complex. Furthermore, removal of camps and their residents without providing alternative housing options is likely to result in even more damage to preserves because most of those who are evicted have no other alternative and eventually end up establishing a new camp elsewhere.

Illegal camps are established in the canyons throughout major agricultural areas in the County because those living there see no other alternative. Due to the complexities involved, it is unlikely that the problem of illegal encampments will be permanently solved with long-term solutions in the near future. However, the County will work to implement short-term measures to minimize the further degradation of open space.

Because confrontation of residents of illegal encampments may involve a number of complex issues ranging from health and safety to legal and civil rights, preserve managers should not attempt to confront individuals alone. Instead, preserve managers and other members of the public should notify the County and law enforcement regarding the location of illegal encampments and coordinate any action or response through the County Sheriff's Department and other qualified entities.

2.6 Erosion Control

Erosion is promoted by the combination of erodible soils, steep slopes, sparse to no vegetation, and certain hydrologic condition of the soils. Erosion can be aggravated by human disturbance such as fire-control activities, trail or road construction, or off-road vehicle activity. Erosion hazards to biological and cultural resources include: pollution and sedimentation of important water sources; the loss of vegetative cover from landslides; erosion of archaeology sites; and depletion of the soil seed bank. The following steps should be taken to prevent erosion damage.

Identify and prioritize areas for erosion control

- Identify areas of moderate to severe erosion within and adjacent to the preserve.
- Determine causes of erosion and current or potential adverse or beneficial effects on habitat or cultural resources within the preserve.
- Rank identified erosion areas according to threats to biological or cultural and other resources. Include a cost estimate for erosion control measures.

Develop erosion control plans

- As part of ASMDs, develop and implement an erosion control plan for high priority erosion control areas. In general, this will include establishing physical features to slow surface flow and dampen initial precipitation impact, and revegetation of eroded surfaces for long-term protection. In steep areas, rock areas, and areas of high storm flow, permanent rock or concrete revetments may be required to stabilize undesirable erosive forces.

Address slope stabilization and surface drainage

- Prepare contingency native seeding plans for highly erosive areas temporarily disturbed by fire or other disturbances.
- Prohibit bare surface grading for fuel management/fire lines on steep slopes. Ensure that all techniques implemented for fire control leave (or replace) adequate vegetation cover to prevent surface erosion.
- Ensure that all areas identified for revegetation are adequately stabilized by either a binder or straw cover after planting to minimize surface erosion.

- Identify all cultural resources within the areas with high erosion potential and develop methods to stabilize the cultural resources.
- Ensure that no new surface drainage is directed into the preserve.

2.7 Landscaping Restrictions

Active landscaping (i.e., the introduction of native or non-native plant species around developed areas) is often in direct conflict with biological objectives. Of particular concern are:

- (1) The introduction of non-native, invasive species that can displace native species in natural communities;
- (2) Horticultural regimes (irrigation, fertilization, pest control, and pruning) that alter site conditions in natural areas, thereby promoting shifts in species composition from a native to a non-native flora;
- (3) Irrigation, fertilization or pest control practices that impact Native American traditional use areas, such as basket material gathering areas;
- (4) Genetic contamination from the introduction of native cultivars not collected onsite or in close proximity to the site; and
- (5) Dumping of vegetative or other landscaping waste in preserve areas by landowners and private contractors has the potential to introduce invasive species, kill native species, introduce plant pathogens, attract pest animals, and alter natural nutrient levels in the soil.

Because preserve lands are designated as biological open space, active landscaping should be absent or minimal. However, where landscaping may be required (e.g., staging areas), or where problems are anticipated in preserve areas due to landscaping in nearby developed areas, the following guidelines are provided:

Control invasive, non-native plant species

- Limit the use of non-native, invasive plant species in landscaping palettes in preserve areas or new public projects within 500 feet of the preserve. This includes container stock and hydroseeded material.
- Revegetate areas where non-native, invasive species are removed with species appropriate to the biological goals of the specific preserve area.

Control invasive, non-native animal species

- Control the spread of invasive non-native invertebrate pests by inspecting all planting stock before it is delivered to any property in or adjacent to a reserve. Argentine ants and red fire ants are two highly invasive and destructive pests that are known to be transported in container stock. Any container stock to be imported into preserves, or into any public projects adjacent to a preserve, should be first inspected by qualified individuals to detect Argentine ants, fire ants, and other invasive pests.

Monitor horticultural regimes

- Limit, to the degree feasible, fertilization of ornamental plants on all public areas draining into the preserve, to reduce excess nitrogen runoff to areas of native vegetation. Excess nitrogen is detrimental to plant mycorrhizal growth and fosters invasive non-

native weed invasion. Initiate fertilizer management programs that apply the minimal amount of fertilization required for all public horticultural areas adjoining the preserve.

- Limit ornamental pest control activities adjacent to the preserve, to the degree feasible.
- Consult with Native American Tribes to ascertain which areas are used for traditional cultural practices and develop guidelines for use.

Avoid Genetic Contamination

- Avoid genetic contamination of native plant species by prohibiting the introduction of cultivars or native species from different geographic regions. If these introductions are similar enough genetically to native species in the preserve, then cross-breeding or hybridization could occur. All stock introduced into the preserve that has the potential for breeding with native species already present onsite should be propagated from material collected in the vicinity. Special attention should be given to the elimination of native plant landscaping cultivars of coastal sage scrub and chaparral species taken from central or northern California locations, or from islands off the coast of southern California. Also, refer to the County's policy regarding use of native plants (County of San Diego, 2000).

2.8 Fencing, Signs, and Lighting

Fencing plays an important role in managing the use of the landscape by humans, domestic animals, and wildlife. Fencing can restrict grazing and control human access. Fencing can direct wildlife to road undercrossings and prevent road kills. However, fencing also can impact cultural resources, restrict normal wildlife movement, restrict access to food and water, and guide wildlife onto roads.

Signs educate, provide direction, and promote the sensitive use and enjoyment of natural areas, but they can also inadvertently invite vandalism and other destructive behavior. Signs that explain the rules of the preserve (campfires, firearms usage, protection of archaeological resources, camping, etc.) are most effective at public entrance points. Signs for educational nature trails and on roads near wildlife corridors (to reduce road kills) also should be posted at appropriate locations.

Artificial lighting adversely impacts habitat value of the preserve, particularly for nocturnal species. Therefore, lighting should not be permitted in the preserve except where essential for roadways, facility use, and safety. Along preserve edges, major highway lighting should be limited to low pressure sodium sources directed away from preserve areas.

Fencing

Dismantle existing fencing inside the preserve, except where needed to:

- Restrict managed grazing (e.g., use of barbed wire fencing may be needed to restrict livestock from riparian areas)
- Limit road kills (e.g., fencing should be used to funnel wildlife away from at-grade road crossings and toward undercrossings)
- Protect particularly sensitive species or habitats (e.g., use perimeter fencing in linkage areas where preserve widths are narrower and there is greater exposure to adverse effects)

- Restrict human access (e.g., limit human access to designated trails using natural vegetation, topography, signs, and limited fencing)
- Define private properties in the preserve.

Design and locate fences within the preserve so they do not impede wildlife movement or impact cultural resources.

Signs

- Provide educational brochures, interpretive centers, and signs to educate the public about the biological and cultural resources and goals of the Plan.
- Establish signs that explain usage rules at the periphery of the preserves that are open to human access (e.g., firearms prohibited, keep pets on a leash, pack it in – pack it out).
- Use educational signs along nature trails and at appropriate cultural resources.
- Limit the use of signs that attract attention to sensitive species or cultural resources, as such designation may invite disturbance.
- Use temporary signs to indicate habitat restoration or erosion control areas.
- Use barriers and informational signs to discourage creation of unauthorized “shortcuts.”
- Establish road signs near wildlife corridors to help reduce road kills.

Lighting

- Eliminate lighting in or adjacent to the preserve except where essential for roadway, facility use, and safety and security purposes.
- Use low-intensity illumination sources (e.g., low-pressure sodium). Do not use low voltage outdoor or trail lighting, spotlights, or bug lights. Shield light sources adjacent to the preserve so that the lighting is focused downward.
- If night lighting is necessary adjacent to a preserve area, limit its duration or extent during the night, if possible (e.g., automatic off switches on ball fields after 10 P.M). Shut off lights near preserve perimeter after 10 P.M.

2.9 Law Enforcement

Enforcement programs are needed to ensure compliance with land use plans and restrictions (such as zoning), hunting laws, collecting restrictions, and to ensure that fire management and recreational uses occurring are compatible with preserve goals. This is a critical component of ASMDs.

Access control and other restrictions within the preserve should be strictly enforced. Local community groups should be provided a public education program to explain goals and regulations as well as educate the public on the area’s biological and cultural resources.

Land managers must also cooperate with public health and safety personnel to achieve their goals, while helping to reduce or eliminate impacts to natural resources within the preserve system.

2.10 Native American Traditional Use Areas

Consultation with local tribes pursuant to Government Code 65562.5 is required for any open space that contains cultural sites, even if the primary purpose of the open space is not for cultural resources. Such consultation should be summarized, including any role that tribes may have in use and management of the cultural sites and traditional use areas located in the open space, in the ASMDs. Native American or Indian Tribes often have identified land areas where they can use native biological resources for traditional purposes, such as gathering basket weaving material. Management of preserve areas can enhance the plants used for such practices. In addition, preserve managers should work closely with Native Americans to enhance restoration or native plants.

Archaeological Site Monitoring

Archaeological site monitoring will track changes with these sites and encourage development of informed management priorities. Archaeological site monitoring will require site stewards to manually inspect the site semi-annually and document impacts and changes. Management requirements should be implemented for each site. When it is determined that impacts are a direct result of biological management practices, the preserve manager should stop such practices and consult with professionals on methods to reduce impacts. Archaeological management practices should be assessed yearly and appropriate changes implemented.

Historic Site Monitoring and Maintenance

Historic site monitoring and maintenance will identify impacts to the historic sites and allow for development of appropriate maintenance practices. Quarterly evaluations of the historic resources shall be conducted and documented by the site steward. The site steward will implement maintenance activities, previously identified in the management guidelines. The preserve manager, in consultation with appropriate professionals, will conduct annual review of the maintenance standards and practices.

2.11 Compliance Monitoring

The goal of compliance monitoring is to determine whether the Plan is being adequately implemented. There are two components to the compliance monitoring program.

- 1) The acres of land preserved (gains) verses land developed (losses) will be tracked using Habitrak, or similar programs that may be developed in the future. Habitrak is a Geographic Information System extension that has been successfully used by the County of San Diego and the City of San Diego to track habitat preservation, and land development since 1999. Use of Habitrak will help ensure that the final ratio of preserved to developed land meets the objectives of the Plan.
- 2) Specific biological and cultural management activities within preserve areas will be tracked in a GIS-based database. The cultural resource data is confidential and access is limited. The overall data management system will enable preserve managers to track and coordinate management activities both temporally and spatially. This will ensure that management is being completed in a timely manner as required by ASMDs. An annual report will be submitted to the wildlife agencies detailing the quantity of land preserved, land developed, and significant management activities.

3 PLAN WIDE MANAGEMENT GUIDELINES

3.1 Habitat Restoration

Habitat restoration is the process of reestablishing or enhancing historic biological functions and values to degraded habitats. Restoration methods range from active revegetation to passive management. Generally, labor-intensive restoration methods involving active revegetation take less time to achieve biological goals but at greater cost than more passive management techniques, such as fencing to limit further disturbance. Avoidance of cultural resources should be the priority, however if this is not possible mitigation measures that have a minimal impact on the cultural resources may be employed.

Habitat restoration is not typically required by the Plan permit on preserve lands but is certainly encouraged if resources are available. Each preserve should maintain a prioritized list of potential habitat restoration projects in the event resources become available.

Active revegetation and restoration projects rely on techniques that encourage natural regeneration or use intensive horticultural methods such as planting, seeding, transplanting, and salvaging. The source of seeds and plants used for such projects has significant genetic implications. Non-local planting stock can introduce novel, undesirable, or maladapted genotypes into the ecosystem. Use of non-local stock may also result in mortality or problems with growth and reproduction. Thus, active restoration programs should use propagules from sources close to the restoration site. Planting stock must also be inspected for invasive pests, such as Argentine and fire ants, and any infested stock must be removed from the vicinity of the reserves and properly treated or disposed.

Restoration may be desirable to enhance linkages and disturbed habitats and should include reintroduction of native species and eradication of non-native species. Project-specific mitigation plans should identify where restoration is most needed, and detailed restoration management plans should be prepared according to the following guidelines:

Evaluate Restoration Needs and Feasibility

- Identify and prioritize potentially restorable areas based on conservation objectives, focusing on the need for connectivity, territory size, and the potential to enhance habitats of sensitive species.
- Evaluate potentially restorable areas based on the level of effort and cost needed to restore them as functional habitat. Cost estimates should include implementation and monitoring efforts.
- Assess existing site quality, site access, adjacent land uses, difficulty of achieving restoration goals, cost of available restoration techniques appropriate to the site conditions and fire risk.
- Assess the physical factors of the restoration sites, including topography, slope, aspect, elevation, drainage, soils, hydrologic regime, and climatic regime.
- Assess existing biological conditions, past management practices, and sources of disturbance.

- Collect reference data from an adjacent or nearby habitat in good condition to serve as a planning guide and as a subsequent comparison with monitoring data from the restoration site.
- Identify all cultural resources and develop guidelines to minimize impacts to these resources.

Develop a Conceptual Restoration Plan

- Develop a conceptual restoration plan, followed by formal plans and specifications for those areas in which active revegetation methods (installation or maintenance) are proposed. Identify restoration goals and objectives, restoration design criteria, project management and implementation responsibilities, scheduling constraints, planting materials, equipment constraints, evaluation criteria, and remedial measures. Most restoration plans will be a combination of long-term management changes combined with more active revegetation where feasible.
- Develop management guidelines for all cultural resources within the planned restoration area. Native vegetation is a compatible use in archaeology sites. However, guidelines should address which plants will be used and how they will be planted. Impacts to the cultural resources from the restoration activities, both direct and indirect, should be addressed and plans to minimize impact clearly defined.
- Develop formal construction documents that address the specific responsibilities and authorities of applicable personnel (e.g., the land manager, contractors, monitors, etc.). Specifications should include all pertinent conditions, coordination requirements, schedules, warranty periods, protected areas, and restricted activities. These plans will be implemented by a registered landscape contractor experienced with restoration of native habitats, although volunteer help may be used if correctly supervised.
- Specify seed and plant procurement procedures a year in advance of actual planting. Use propagules only from sources near the restoration site. Do not allow species substitutions unless approved by the project restorationist. Integrate genetic conservation considerations into procurement specifications.
- Require invasive non-native plant control and debris removal prior to restoration planting and during establishment of the plantings. Invasive non-native plant control specifications should describe techniques, target species, safety precautions, and compliance with laws and regulations. Such specifications must be developed by a licensed pest control advisor if chemical controls are recommended.
- Use mycorrhizal fungi, where appropriate. A mutualistic relationship exists between plant roots and mycorrhizae. Certain plant species benefit from increased ability to take up nutrients and withstand drought when mycorrhizae are present. Site disturbances, especially the removal or disturbance of the topsoil layers, can cause mycorrhizae to die out on a site. Weed invasion can further lower mycorrhizal presence in the soil. Mycorrhizal inoculation of the soil will reintroduce the fungi to sites where it has been lost. Such inoculation can be accomplished through planting inoculated container plants or the introduction of litter, duff, or soil from an inoculated site. The best source of mycorrhizal fungi is salvaged topsoil taken from a site where it is present, although the fungi can be killed if the soils are stored improperly. Topsoils may also contain other essential ecosystem components such as humus, soil fauna, and cryptogamic plant spores.

- Specify irrigation necessary to establish restoration plantings. Irrigation operation specifications should also include system maintenance and coverage monitoring. Irrigation of restoration projects differs from conventional landscaping where irrigation is provided indefinitely. In native restoration projects, the goal is to aid plant establishment to the point that the plants become self-sufficient on natural sources of precipitation. Some types of restoration may not need irrigation.
- Delineate site protection measures both during restoration activities and afterward, during the establishment period. Protection may include the use of fences, flagging, signs, trails, patrols, and other barriers. Protection of the site often requires management of offsite resources and contaminants, drainage, invasive non-native plant species, vandalism, and trash. Protection measures should be used that don't impact cultural resources.
- Establish maintenance standards to ensure restoration success. Intensive maintenance at least once a month during the first two years after planting is usually required, and where necessary, should include irrigation, weed control, debris removal, replanting, reseeding, staking, erosion control, fertilization, pest control, and site protection. Maintenance should be conducted until success criteria are met (generally three to five years).

Develop a Restoration Monitoring Program

- Where any active revegetation is necessary to accomplish restoration goals, provide clearly defined contractor education and construction monitoring programs to ensure proper installation and maintenance and to protect sensitive resources adjacent to the restoration area.
- Establish long-term biological and horticultural monitoring programs following revegetation.
 - Biological monitoring: Collect field data to assess whether project success goals are being met, including species composition, mortality of plantings, cover at different vegetation levels, species distribution and diversity, and wildlife monitoring.
 - Horticultural monitoring: Supervise the actions of the maintenance contractor, and recommend remedial actions to ensure proper erosion control, debris removal, weed and pest control, irrigation scheduling and cessation, and protective fencing.
- Specify success criteria by which the restoration will be judged. These are usually developed from a combination of existing reference site data and prior measurements in other restoration endeavors. Design monitoring of restoration sites to supply data to evaluate these standards. Develop remedial measures in advance of project implementation should performance standards not be met.

3.2 Species Re-introduction

Species reintroduction refers to relocating a sensitive plant or animal species into native habitat within its historic range to enhance species survival. Reintroduction can be costly and is not yet widely conducted or unequivocally successful. Although *in situ* conservation is always more desirable than reintroduction, reintroduction may provide the only hope for some species on the brink of extinction or populations for which impacts cannot be avoided.

Re-introductions will often require appropriate federal and state permits. Species re-introductions are not a requirement of the Plan permit, but may help enhance the preserve system. The decision to re-introduce a species depends on a number of species-specific and site-specific factors, and re-introduction requires detailed planning and monitoring. Re-introduction efforts are appropriate if the species is not likely to recover or persist on its own and its biology is known or being researched. The site proposed for re-introduction should be within the historic range of the species, ecologically appropriate, sensitive to cultural resources, and within the preserve. Threats to the species' persistence should be removed prior to re-introduction.

3.3 Non-native Invasive Species Control

Native species are often at a disadvantage after non-native invasive species or non-native predators are introduced, so special management measures are needed to control non-native invasive species and non-native predators. Non-native plant and animal species have few natural predators or other ecological controls on their population sizes, and they thrive under conditions created by humans. These species may aggressively out-compete native species or otherwise harm sensitive species. When top predators are absent, intermediate predators multiply and increase predation on native bird species and their nests. Feral and domestic animals, particularly cats, also prey on small native wildlife species. Agricultural areas, livestock holding areas, and golf courses provide resources for increased populations of parasitic cowbirds, which adversely affect native songbird populations. Litter and food waste from migrant worker camps and picnickers can contribute to an increase in Argentinean ant populations, which out-compete native ants, the primary food resource of Coast horned lizards.

Feral and Domestic Animal Control

- Document any observed evidence of feral or domestic animal use in the preserve.
- Establish an education program for homeowners regarding responsible pet ownership. The program should encourage (a) keeping pets indoors, especially at night; (b) having pets neutered or spayed to reduce unwanted reproduction and long-range wanderings; (c) bellring of cats to reduce their effectiveness as predators; (d) discouraging release of unwanted pets into the wild; and (e) keeping dogs on leashes when walking them on trails in preserve areas.
- Fence selected areas of the preserve adjacent to housing to keep pets out of particularly sensitive areas.
- Establish a feral animal removal program.

Cowbird Trapping Program

- Document and monitor the extent of cowbird parasitism on target species nests in the preserve.
- If necessary, establish a cowbird trapping program to increase nesting success of target species affected by cowbird parasitism.

Invasive Non-native Plant Control

- Prioritize areas for non-native invasive species control based on aggressiveness of invasive species and degree of threat to the native vegetation. Refer to Table 2 for a partial list of invasive non-native plant species that could threaten native habitats.

- Use an integrated pest management approach (i.e., use the least biologically intrusive control methods) at the most appropriate period of the growth cycle, to achieve the desired goals.
- Consider both mechanical and chemical methods of control, as well as managed grazing. Only herbicides compatible with biological goals should be used. Only licensed pest control advisers are permitted to make specific pest control recommendations.
- Use of herbicides or pesticides in areas of traditional cultural use should generally be prohibited.
- Properly dispose of all invasive non-native plant materials that are removed from preserve lands (e.g., in off-site facilities).
- Revegetate invasive non-native weed removal areas with species appropriate to biological goals.
- Contact adjacent landowners with source populations of non-native, invasive plants to coordinate eradication efforts or to request them to remove these plants.
- Consult with the Native American tribes to identify areas of traditional cultural activities and develop management strategies in consultation with these tribes.

Table 2. Common Non-native Invasive Species

<i>Acacia</i> spp. Acacia	<i>Cortaderia selloana</i> Pampas grass	<i>Phoenix canariensis</i> Canary Island palm
<i>Ailanthus altissima</i> Tree-of-heaven	<i>Cotoneaster pannosa</i> Cotoneaster	<i>Phragmites australis</i> Common reed
<i>Arundo donax</i> Giant reed	<i>Cynara cardunculus</i> Artichoke thistle	<i>Pyracantha angustifolia</i> Pyracantha
<i>Atriplex semibaccata</i> Australian saltbush	<i>Cynodon dactylon</i> Bermuda grass	<i>Raphanus sativus</i> Wild radish
<i>Bambusa</i> spp. Bamboo	<i>Delawarea odorata</i> German ivy	<i>Ricinus communis</i> Castor bean
<i>Brassica</i> spp. Mustard	<i>Dipsacus</i> spp. Teasel	<i>Robinia pseudoacacia</i> Black locust
<i>Carduus</i> spp. Thistle	<i>Eucalyptus</i> spp. Gum, eucalyptus	<i>Salsola tragus</i> Russian thistle
<i>Carpobrotus chilensis</i> Iceplant	<i>Foeniculum vulgare</i> Fennel	<i>Schinus molle</i> California pepper
<i>Carpobrotus edulis</i> Iceplant	<i>Hedera helix</i> English ivy	<i>Schinus terebinthifolius</i> Brazilian pepper
<i>Centaurea solstitialis</i> Yellow starthistle	<i>Lepidium latifolium</i> Perennial pepperweed	<i>Silybum marianum</i> Milk thistle
<i>Chenopodium</i> spp. Goosefoot, lambsquarter	<i>Melilotus</i> spp. Sweet clover	<i>Spartium junceum</i> Spanish broom
<i>Chrysanthemum</i> spp. Chrysanthemum	<i>Muehlenbeckia complexa</i> Mattress vine	<i>Tamarix</i> spp. Tamarisk, salt cedar
<i>Cirsium</i> spp. Thistle	<i>Myoporum laetum</i> Myoporum	<i>Ulex europaeus</i> Gorse
<i>Conium maculatum</i> Poison hemlock	<i>Nicotiana glauca</i> Tree tobacco	<i>Vinca major</i> Periwinkle
<i>Conyza canadensis</i> Horseweed	<i>Pennisetum clandestinum</i> Kikuyu grass	<i>Washingtonia robusta</i> Fan palm
<i>Cortaderia jubata</i> Andean pampas grass	<i>Pennisetum setaceum</i> Fountain grass	<i>Xanthium strumarium</i> Cocklebur

- Also refer to the California Exotic Pest Plant Council's *Exotic Pest Plants of Greatest Ecological Concern in California*. Non-native grasses in San Diego County are too numerous to list all of them individually.

3.4 Vegetation Management (Section Under Development)

Vegetation management including fuel load management will be incorporated for all preserves as an Ecosystem Health Plan in the ASMD. Vegetation management activities are covered under the Plan and lead to ecosystem health, resiliency, and fire safety. Each Ecosystem Health Plan will be prepared using the guidelines in Section 4 for the particular vegetation communities in mind. A variety of measures may be required such as maintaining fuel management zones, creating and maintaining fuel breaks, vegetation thinning, fire suppression, and controlled burns. There are a variety of methods that may be used, including but not limited to hand thinning, controlled ignitions, managed grazing, creating fire lines, mowing, and water or retardant drops. Since these measures are intended to adaptively manage for ecosystem health and public safety, mitigation will not be required and these activities will be covered under the Plan permit.

4 HABITAT SPECIFIC MANAGEMENT GUIDELINES

In addition to the Plan Wide Management Guidelines discussed in Section 2, certain habitat types have specific management and monitoring needs. The discussion below outlines major factors that impact specific habitats and discusses methods to mitigate these impacts through monitoring and adaptive management. It is intended that by addressing the factors discussed below and in other sections of this document, resource management actions will be adequate for the conservation of all covered species.

4.1 Riparian, Marsh and Wet Meadow Habitat

Guidelines for resource management of riparian, marsh and wet meadow habitats are discussed below. The primary species that will benefit from resource management actions in these areas are listed in Table 3.

Table 3. Covered Species Occurring within Riparian Habitats

COMMON NAME	SCIENTIFIC NAME
Western pond turtle	<i>Emmys marmorata</i>
Arroyo southwestern toad	<i>Bufo microscaphus californicus</i>
Southwestern willow flycatcher	<i>Empidonax trailii extimus</i>
Least Bell's vireo	<i>Vireo bellii pusillus</i>
Yellow breasted chat	<i>Ictera virens</i>
Harbison's dun skipper	<i>Euphys vestris harbisoni</i>
Cooper's hawk	<i>Accipiter cooperi</i>
San Diego ambrosia	<i>Ambrosia pumila</i>
Tricolored blackbird	<i>Agelaius tricolor</i>

Tables 4 and 5 present information on the biggest challenges faced in riparian, marsh and wet meadow habitats and corresponding management and monitoring guidelines.

Table 4. Hydrology

Hydrology	
CHALLENGES	<ul style="list-style-type: none"> Water sources may accumulate contaminants (e.g., toxins, nutrients, solid waste) as a result of urban/agricultural runoff, construction, or trash dumping. These contaminants can be toxic to riparian species, or impact water quality. Alteration of hydrologic regimes caused by urban development and irrigated agriculture can have an effect on channel processes (e.g., erosion rates, sediment transport) and surface flows. Many riparian species are adapted to habitat conditions created by specific hydrologic regimes and when hydrologic regimes are altered the species composition of riparian, marsh, and meadow communities may change. Stream banks are highly susceptible to erosion due to human uses
MANAGEMENT GUIDELINES	<ul style="list-style-type: none"> Educate nearby residents about landscaping alternatives that deliver less runoff to watersheds (e.g., xerophytic plantings, drip irrigation) and household chemicals that should not be released into watersheds. Ensure that construction/development projects occurring in upland areas adjacent to riparian habitat follow regulations regarding best management practices and take all measures to prevent spills, runoff or dumping of any materials into riparian zones. Where necessary take measures to stabilize banks and control erosion. Conversely, there may be situations where existing erosion control structures should be removed in order to create a more natural stream/riparian ecosystem. Where necessary, consider enhancing aquatic habitat for covered species (e.g., arroyo toad, western pond turtle) Limit use of land adjacent to streams through signage, trail management and patrolling.
MONITORING GUIDELINES	<ul style="list-style-type: none"> In conjunction with the vegetation community surveys described in Section 3.2, a visual assessment of channel conditions should be conducted. Where channel conditions are considered poor (e.g., unstable banks) follow up surveys should be conducted to determine if management actions are necessary. The County of San Diego Watershed Protection Program monitors water quality throughout San Diego County. Monitoring sites are annually sampled between May and September. The water quality parameters analyzed vary by site depending upon the types of pollutants that are likely to be delivered from nearby land use. Parameters analyzed include: dissolved oxygen, pH, bacteria, nitrates, ammonia, phosphates, pesticides, herbicides, oil, copper, zinc, lead, and nickel. Where high levels of a specific pollutant are found, an effort is made to identify the source. The data resulting from the Watershed Protection Program's efforts should be analyzed to identify water quality concerns within preserve areas. Additional monitoring sites may be added to compliment the current program and meet the monitoring needs of specific preserve areas. An additional source of information relating to water quality is the annual reports produced by the San Diego Municipal Stormwater Copermitees Urban Runoff Monitoring program. These reports include data related to watersheds throughout the County of San Diego and include information regarding ecological health of watersheds based upon macroinvertebrate sampling, mass loading, storm drain outfall, and toxic hotspots.

Table 5. Invasive Species

Invasive Species	
CHALLENGES	<ul style="list-style-type: none"> ▪ Predation of juvenile western pond turtles by non-native species (e.g., bullfrogs, bass, non-native turtles) and competition between western pond turtles and non-native turtle species. ▪ Predation of arroyo toad and other native species by non-native species (e.g., bass, and bullfrogs). ▪ Nest parasitism of yellow breasted chat, southwestern willow flycatcher and least Bell's vireo by brown-headed cowbirds (<i>Molothrus ater</i>). ▪ Predation of covered species by animal populations that have been enhanced by urbanization and by feral animals (e.g., raccoons, skunks, cats and dogs). ▪ Invasive non-native plants such as pampas grass, arundo, artichoke thistle, and tamarisk compete with native species and in high numbers can have a significant impact on hydrology by clogging channels and increasing flooding.
MANAGEMENT GUIDELINES	<ul style="list-style-type: none"> ▪ Control programs should target known source populations of invasive species in an effort to significantly reduce their numbers or eradicate them from a local area where they exert negative impacts on native species. ▪ Brown-headed cowbird populations may be controlled by trapping adults, removing eggs from host nests and other methods. ▪ Aquatic invasive animals may be controlled by trapping, electrofishing and other methods. ▪ Non-native invasive plant species may be controlled by manual removal, herbicide application, a combination of these methods, or other methods. ▪ Educate nearby residents and preserve users about measures they could take to reduce the level of invasive species (e.g., don't set pets (turtles, frogs) free, keep pets from straying into preserve areas, and cover trash cans).
MONITORING GUIDELINES	<ul style="list-style-type: none"> ▪ Identify source populations of non-native invasive species. ▪ Determine where the distribution of non-native invasive species overlaps with affected covered species, or what populations of covered species may soon be invaded. ▪ Where measures have been taken to control a non-native population, a monitoring program should be established to determine the effectiveness of the control program and whether it should be modified or repeated to achieve better results. ▪ Cultural Resources shall be identified and impacts avoided.

4.2 Coastal Sage Scrub, Chaparral, and Grassland Habitat

Guidelines for resource management of coastal sage scrub, chaparral, and grassland habitats are discussed below. The primary species that will benefit from resource management actions in these areas are listed in Table 6.

Table 6. Covered Species Occurring within Coastal Sage Scrub, Chaparral, and Grassland Habitats

COMMON NAME	SCIENTIFIC NAME	HABITAT TYPE(S)
California gnatcatcher	<i>Poliophtila californica californica</i>	Coastal sage scrub
San Diego cactus wren	<i>Campylorhynchus brunnicapillus couesi</i>	Coastal sage scrub
Golden eagle	<i>Aquila chrysaetos</i>	Coastal sage scrub, chaparral, and grassland
Burrowing owl	<i>Athene cunicularia hypugea</i>	Coastal sage scrub, and grassland
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Grassland
Bell's sage sparrow	<i>Amphispiza belli belli</i>	Coastal sage scrub, and chaparral
Rufous-crowned sparrow	<i>Aimophila ruficeps canescens</i>	Coastal sage scrub, and chaparral
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>	Grassland, and coastal sage scrub
San Diego black-tailed jackrabbit	<i>Lepus californicus bennettii</i>	Coastal sage scrub, chaparral, and grassland
Mountain lion	<i>Felis concolor</i>	Coastal sage scrub, chaparral, and grassland
Orange-throated whiptail	<i>Cnemidophorus hyperythrus</i>	Coastal sage scrub, chaparral, and grassland
Coast horned lizard	<i>Phrynosoma coronatum blainvillei</i>	Coastal sage scrub, chaparral, and grassland
Quino checkerspot butterfly	<i>Euphydryas editha quino</i>	Coastal sage scrub, chaparral, and grassland
Hermes copper	<i>Lycaena hermes</i>	Coastal sage scrub and chaparral
Nuttall's scrub oak	<i>Quercus dumosa</i>	Chaparral
Parry's tetracoccus	<i>Tetracoccus dioicus</i>	Chaparral
Sticky dudleya	<i>Dudleya viscida</i>	Coastal sage scrub and chaparral
Summer holly	<i>Comarostaphylos diversifolia diversifolia</i>	Chaparral
Del Mar manzanita	<i>Arctostaphylos glandulosa crassifolia</i>	Chaparral
Encinitas baccharis	<i>Baccharis vanessae</i>	Chaparral
Nevin's barberry	<i>Berberis nevinii</i>	Chaparral
Rainbow manzanita	<i>Arctostaphylos rainbowensis</i>	Chaparral
Short leaf dudleya	<i>Dudleya blochmaniae brevifolia</i>	Chaparral
San Diego goldenstar	<i>Bloomeria clevelandii</i>	Coastal sage scrub, chaparral, and grassland
San Diego thornmint	<i>Acanthomintha ilicifolia</i>	Coastal sage scrub, chaparral, and grassland
Coulter's saltbush	<i>Atriplex coulteri</i>	Coastal sage scrub and chaparral
Wart-stem ceanothus	<i>Ceanothus verrucosus</i>	Chaparral
Orcutt's chorizanthe	<i>Chorizanthe orcuttiana</i>	Chaparral
Coast barrel cactus	<i>Ferocactus viridescens var viridescens</i>	Coastal sage scrub

Tables 7 and 8 present information on the biggest challenges faced in coastal sage scrub, chaparral, and grassland vegetation communities and corresponding management and monitoring guidelines.

Table 7. Fire

Fire	
CHALLENGES	<ul style="list-style-type: none"> ▪ Chaparral communities are adapted to natural fire regimes. These communities support different assemblages of plants at each stage of development – “fire following” annuals and animals that prefer open areas in early stages and “old growth” and cryptic species in later stages – therefore, maintaining a variety of age classes is important to maintain these characteristic species assemblages. ▪ Frequent return intervals of fire may create opportunities for the establishment of invasive species, potentially causing a type conversion from shrublands to annual grasslands. This can be caused by increased ignition frequency often experienced on the urban-wildland interface. ▪ Large and/or rapidly spreading fires can impact natural communities. Large fires can kill more animals than small or moderate fires since there are fewer opportunities to escape. Species not well adapted to post-fire landscapes may have difficulty finding refugia or repopulating large burned patches. ▪ Erosion is often increased after fires due direct exposure of soil to the elements. Erosion and runoff may also be accelerated in some areas due to altered chemical properties of the soil from exposure to extreme temperatures, reducing the organic content of the soil among other changes.
MANAGEMENT GUIDELINES	<ul style="list-style-type: none"> ▪ In some cases prescribed fires may be used as a form of habitat management. However, fire management policies developed for specific preserve areas must consider many variables such as: the potential of fire to eliminate important populations of rare, narrow endemic species, the high severity of fire in more mature chaparral communities, the risk of fires to nearby residents, and leaving refugia of unburned habitat, if possible. ▪ Human-caused ignition sources (e.g., house fires, yard fires, chimney embers, firecrackers) should be controlled through public outreach and enforcement to prevent unnatural fire frequency.
MONITORING GUIDELINES	<ul style="list-style-type: none"> ▪ Fire history maps maintained by CALFIRE should be reviewed at least once every 10 years to determine if preserve lands are within natural fire return intervals & for estimation of fuel age class. ▪ Inspect fuel management zones on urban-wildland interfaces (in conjunction with Fire Agencies) to assure adequate fire buffers between homes and wildlands. ▪ Post-fire monitoring should be conducted within the first 3 years following significant fires; the first 2 growing seasons after the fire is preferable. Elements to include in monitoring include sensitive plant populations, host plants for sensitive species, existing or potential erosion threats (to life, property, or natural resources), non-native invasive species, vegetation community response, and animal movement.

Table 8. Invasive Species.

Invasive Species	
CHALLENGES	<ul style="list-style-type: none"> ▪ Nest parasitism of California gnatcatchers, Bell's sage sparrows, rufous crowned sparrows, and grasshopper sparrows by brown-headed cowbirds (<i>Molothrus ater</i>). ▪ San Diego cactus wren and Stephens' kangaroo rat are particularly susceptible to predation by animal populations that have been enhanced by urbanization and by feral animals (e.g., raccoons, skunks, cats and dogs). ▪ Non-native Argentine ant population's benefit from artificial year-round water sources (e.g., irrigation, urban runoff, gray-water percolation). Argentine ants compete with native ants and often displace them from suitable habitats, which can have significant impacts on food webs. Argentine ants are of special concern for San Diego horned lizards and orange-throated whiptail, which prefer to feed on native ant and termite species, respectively. ▪ High densities of non-native annual grasses or forbs can reduce the ability of raptors to forage, and degrade habitat for rodents including Stephens' kangaroo rat. Decreased available rodent populations can cause a decrease in sites for burrowing owls and a decrease in prey base for raptors and other predators. ▪ High densities of non-native annual grasses and forbs can compete with native plants, including sensitive species and host plants for a variety of insects which may serve as important pollinators or be sensitive themselves.
MANAGEMENT GUIDELINES	<ul style="list-style-type: none"> ▪ Brown headed cowbird populations may be controlled by trapping adults, removing eggs from host nests and other methods. ▪ Educate nearby residents and preserve users about measures they could take to reduce the level of invasive species (e.g., keep pets from straying into preserve areas, cover trash cans, and use landscaping alternatives that deliver less runoff to watersheds such as xerophytic plantings and drip irrigation). ▪ Educate nearby residents regarding the potential impacts of using non-native, invasive plant species for landscaping. ▪ Inspect any plants being brought into a preserve area for Argentine ants. ▪ Control of non-native weeds, including annual grasses and forbs, should be accomplished by a combination of methods (i.e., integrated pest management) including cutting, herbicides, grazing, prescribed fire, and revegetation. ▪ Managed grazing can be an affective method to reduce the density of non-native grasses and forbs. Precautions must be taken to ensure that threats to habitat are minimized and benefits are maximized. For example: using pulses of grazing or a deferred rest rotation; exclusion of grazing in wetland areas; and holding cattle for several days between grazing areas to prevent spread of weeds. ▪ Seeding with native species can help re-establish healthy populations of native plants, including host plants.
MONITORING GUIDELINES	<ul style="list-style-type: none"> ▪ Identify source populations of non-native invasive species, as well as isolated populations or individuals that may spread propagules farther into preserves. ▪ Determine where the distribution of non-native invasive species overlaps with affected covered species, or where populations of covered species may soon be invaded. ▪ Where measures have been taken to control a non-native population, a monitoring program should be established to determine the effectiveness of the control program. ▪ In Traditional Use areas, consult with Native Americans on appropriate methods to control invasive species.

4.3 Oak Woodlands and Coniferous Forest

Guidelines for resource management of oak woodland and coniferous forest communities are discussed below. The primary species that will benefit from resource management actions in these areas are listed in Table 9.

Table 9. Covered Species Occurring within Oak Woodland or Coniferous Forest Habitats

COMMON NAME	SCIENTIFIC NAME	HABITAT TYPE(S)
Harbison's dun skipper	<i>Euphys vestris harbisoni</i>	Oak woodlands
Golden eagle	<i>Aquila chrysaetos</i>	Oak woodlands and coniferous forest
Mountain lion	<i>Felis concolor</i>	Oak woodlands and coniferous forest
Engelmann oak	<i>Quercus engelmannii</i>	Oak woodlands

Tables 10 and 11 present information on the biggest challenges faced in oak woodland and coniferous forest communities and corresponding management and monitoring guidelines.

Table 10. Invasive Species

Non-native Invasive Species	
FACTORS	<ul style="list-style-type: none"> Non-native Argentine ant populations benefit from urban runoff. Argentine ants compete with native ants and often displace them from suitable habitats, which can have important impacts on food webs. Argentine ants are of special concern for San Diego horned lizards and orange-throated whiptail, which prefer to feed on native ant and termite species, respectively. Oak groves may be Native American traditional use areas. Presence of non-native plant species can result in unnatural hydrological regimes in riparian oak woodlands.
MANAGEMENT GUIDELINES	<ul style="list-style-type: none"> Educate nearby residents about landscaping practices that deliver less runoff to watersheds such as, xerophytic plantings and drip irrigation. Inspect any plants being brought into a preserve area for Argentine ants.
MONITORING GUIDELINES	<ul style="list-style-type: none"> Identify source populations of non-native invasive species. Determine where the distribution of non-native invasive species overlaps with covered species. Work with County Department of Agriculture, Weights & Measures to monitor spread of plant diseases. Samples of diseased materials are regularly tested in the Department of Agriculture, Weights & Measures' plant pathology lab. Any detection of potentially threatening diseases will be communicated to MSCP preserve managers in Department of Parks & Recreation to begin formulating a control strategy.

Table 11. Fire

Fire	
FACTORS	<ul style="list-style-type: none"> ▪ Frequent fires and infrequent fires can affect recruitment of new trees and alter species composition, including dominant species. ▪ Large fires can severely impact sensitive species and habitat. Large fires can kill more animals than small or moderate fires since there is less room to escape. Plant and animal species may be left without adequate refugia to maintain their populations until recovery of native vegetation can occur. ▪ Unusually hot fires caused by unnaturally high fuel loads (from fire suppression, drought, or disease) can damage soils causing unusual amounts of erosion, removing the soil seed bank and thereby the community's means of natural recovery.
MANAGEMENT GUIDELINES	<ul style="list-style-type: none"> ▪ In some cases controlled fires may be used as a form of habitat management. However, ASMDs must consider many variables such as: the potential of fire to eliminate important populations of rare, narrow endemic species; the high severity of fires when fuels have accumulated, the risk of fires to nearby residents, and leaving refugia of unburned habitat, if possible. ▪ Human-caused ignition sources (e.g., house fires, yard fires, chimney embers, firecrackers) should be controlled through public outreach and enforcement to prevent unnatural fire frequency.
MONITORING GUIDELINES	<ul style="list-style-type: none"> ▪ Fire maps maintained by CALFIRE should be reviewed every 10 years to determine if preserve lands are within natural fire return intervals. ▪ Inspect fuel management zones on urban-wildland interfaces (in conjunction with Fire Agencies) to assure adequate fire buffers between homes and wildlands. ▪ Post-fire monitoring should be conducted within the first 3 years following significant fires; the first 2 growing seasons after the fire is preferable. Elements to include in monitoring include sensitive plant populations, existing or potential erosion threats (to life, property, or natural resources), and animal movement. (More details regarding post-fire monitoring will be provided in Fire Management Plans for preserves.)

4.4 Vernal Pools

Management of vernal pools should be consistent with the management recommendations in the Ramona Vernal Pool Conservation Study (TAIC and EDAW, 2005) and the Ramona Grasslands Preserve ASMDs for those vernal pools that occur on County owned lands in the Ramona Grasslands. If other vernal pools are discovered in the plan area, they should be managed in a manner consistent with the principles outlined in the Ramona Vernal Pool Conservation Study. Vernal pool species covered under the Plan are listed in Table 12.

Table 12. Covered Species Occurring within Vernal Pool Habitats

COMMON NAME	SCIENTIFIC NAME
San Diego fairy shrimp	<i>Branchinecta sandiegoensis</i>
Western spadefoot toad	<i>Scaphiopus hammondi</i>
Quino checkerspot butterfly	<i>Euphydryas editha quino</i>
Thread-leaved brodiaea	<i>Brodiaea filifolia</i>
Orcutt's brodiaea	<i>Brodiaea orcuttii</i>
Spreading navarretia	<i>Navarretia fossalis</i>
Little mouseltail	<i>Myosurus minimus apus</i>
Southern tarplant	<i>Centromadia parryi australis</i>
San Diego button celery	<i>Eryngium aristulatum parishii</i>
Parish brittlescale	<i>Atriplex parishii</i>
Coulter's saltbush	<i>Atriplex coulteri</i>

5 SPECIES-SPECIFIC MANGEMENT GUIDELINES (*SECTION UNDER DEVELOPMENT*)

6 MANAGEMENT GUIDELINES WITHIN BASELINE PRESERVE AREAS

The following County owned and/or operated preserve areas are within the Plan area. San Elijo Lagoon Ecological Reserve and Ramona Grasslands Preserve have established management plans that will guide future management. For the remainder of the preserves, ASMDs will be developed to direct management and monitoring actions.

6.1 San Elijo Lagoon Ecological Reserve

San Elijo Lagoon Ecological Reserve consists of approximately 900 acres. The Reserve is owned and cooperatively managed by the County, the State of California, and the San Elijo Lagoon Conservancy. Land within the reserve included in the Plan area contains: coastal sage scrub, riparian forest, alkali marsh, coastal saltmarsh, freshwater marsh, and estuarine communities. Many sensitive species and cultural resources occur in the lagoon. For many of these species, San Elijo Lagoon provides the only available habitat within the Plan area. Species with their distribution restricted to San Elijo Lagoon are not being covered under this Plan. Covered Species in San Elijo Lagoon are presented in Table 7.

Management of the Reserve is guided by the San Elijo Lagoon Area Enhancement Plan (County of San Diego, 1996), and the San Elijo Lagoon Ecological Reserve Biological Element (Welker and Patton, 1993). Management should continue to rely on these documents for guidance with an emphasis on invasive species removal and enforcement of responsible public use. Additionally, the Escondido Creek Action Plan is currently being prepared which will further define appropriate management actions to be implemented in San Elijo Lagoon. Monitoring of covered species (Table 13), related habitats and cultural resources will occur as outlined in that document.

Table 13. Covered Species Occurring within San Elijo Lagoon

COMMON NAME	SCIENTIFIC NAME
Mountain lion	<i>Felis concolor</i>
Black-tailed jackrabbit	<i>Lepus californicus bennettii</i>
California gnatcatcher	<i>Poliophtila californica californica</i>
Southwestern willow flycatcher	<i>Empidonax trailii extimus</i>
Yellow breasted chat	<i>Ictera virens</i>
White faced ibis	<i>Plegadis chihi</i>
Northern harrier	<i>Circus cyaneus hudsonius</i>
Osprey	<i>Pandion haliaetus</i>
San Diego horned lizard	<i>Phrynosoma coronatum blainvillei</i>
Western spadefoot toad	<i>Scaphiopus hammondi</i>
Orange-throated whiptail	<i>Cnemidophorus hyperythrus</i>
Western pond turtle	<i>Clemmys marmorata pallida</i>
Coast barrel cactus	<i>Ferrocactus viridescens</i>
Del Mar manzanita	<i>Arctostaphylos glandulosa crassifolia</i>
Summer holly	<i>Comarostaphylis diversifolia diversifolia</i>
Nuttall's scrub oak	<i>Quercus dumosa</i>
Wart-stemmed ceanothus	<i>Ceanothus verrucosus</i>

6.2 Ramona Grasslands Preserve

A Framework Management and Monitoring Plan and a conceptual Stream Restoration Plan for the Preserve was developed in August 2004 and revised October 2004 by the Conservation Biology Institute (Conservation Biology Institute 2004). ASMDs (Conservation Biology Institute 2007) were completed and approved in June 2007. Management goals in the ASMDs and Ramona Grassland specific plans are to, “Maintain healthy biotic communities and constituent species populations; maintain functional landscape connections between the grasslands and adjacent undeveloped habitats; and improve water quality in waters of the state, including Santa Maria Creek, and ephemeral aquatic and wetland habitats (i.e. vernal pools, swales, and alkali playas).” To achieve these goals, the plans describe various methods of vegetation management (e.g., prescribed fire, habitat restoration, non-native plant control, managed livestock grazing), and biological monitoring. Covered species occurring in the Ramona Grasslands are depicted in Table 14.

Table 14. Covered Species Occurring within the Ramona Grasslands

COMMON NAME	SCIENTIFIC NAME
Arroyo southwestern toad	<i>Bufo microscaphus californicus</i>
Stephens' kangaroo rat	<i>Dipodomys stephensi</i>
Burrowing owl	<i>Athene cunicularia hypugea</i>
Western spadefoot toad	<i>Scaphiopus hammondi</i>
San Diego fairy shrimp	<i>Branchinecta sandiegoensis</i>
Southern tarplant	<i>Centromadia parryi australis</i>
Spreading navarretia	<i>Navarretia fossalis</i>
Little mousetail	<i>Myosurus minimus apus</i>
Parish brittlescale	<i>Atriplex parishii</i>
Coulter's saltbush	<i>Atriplex coulteri</i>

6.3 Other Existing Open Space Preserves

The County currently manages the Mount Olympus, Santa Margarita, Wilderness Gardens, Hellhole Canyon, Santa Margarita River Park, and Simon/Mount Gower open space preserves. Mount Gower is owned by the Bureau of Land Management, while the other preserves are owned by the County. For these preserves, it is expected that Baseline Species Distribution Surveys and ASMDs will be completed by 2011. Upon completion of the ASMDs, Phase 2 of this document will be implemented.

7 BIOLOGICAL AND CULTURAL RESOURCE MONITORING

The Plan preserves must be monitored to assess the status and trends of covered species and their habitats. Biological monitoring will identify threats to covered species and their habitats, and help identify management needs. Biological monitoring will focus on species, habitats, and essential preserve functions. Monitoring should also identify research needs that when answered will help meet species-specific conservation goals. Cultural resource monitoring will evaluate impacts to Native American traditional use areas, archaeological and historic resources. In addition, cultural resource preservation goals will be evaluated for compatibility with biological goals so that both resources benefit.

Monitoring is the tool to verify effectiveness of stewardship and management actions. Information gained through monitoring will therefore inform management decisions. An adaptive management program will provide corrective actions where monitoring shows that (1) biological or cultural resources are threatened by land uses in or adjacent to the preserve, (2) current management activities are not adequate or effective, or (3) enforcement or other stewardship/management needs (fences intact, new trails/expansion of existing, dogs on leashes, trash, etc...) are identified.

There are three major components to the biological monitoring program: species monitoring, vegetation community monitoring, and wildlife corridor monitoring. Species monitoring will be designed to identify the status or trends of species populations. Vegetation community monitoring will track changes in the quality and quantity of various vegetation types. Finally, wildlife corridor monitoring will assess the use of migration corridors by certain covered species. Information gained through these monitoring programs will enable land managers to prioritize and modify management practices in a manner that is beneficial to the natural communities.

There are three major components to the cultural monitoring program: identification of traditional Native American cultural use areas, archaeological site monitoring, and historic site monitoring and maintenance. Identification of traditional Native American cultural use areas will permit use by Native American for activities such as gathering of basket weaving materials that can lead to public education programs. Archaeological site monitoring will track changes at these sites and allow for informed management. Historic site monitoring and maintenance will identify impacts to the historic sites and allow for development of appropriate maintenance practices. Information gained through these monitoring programs will enable land managers to prioritize and modify management practices in a manner that is the most beneficial to the cultural resources being managed.

7.1 Species Monitoring (Section Under Development)

As the preserve system is assembled, statistically rigorous monitoring methods will be developed and implemented. For existing preserve areas, development of monitoring plans will begin upon adoption of the Plan. In other areas, development of monitoring plans will begin once 300 acres has been preserved in a planning segment (Section 8). The first stage of monitoring plan development will involve baseline species distribution inventories. Once the covered species composition and distribution in a preserve is known, different methodologies will be evaluated to

determine the most cost efficient yet statistically rigorous methods that will meet the goals described below for trend and status monitoring.

Baseline species distribution surveys will assess the distribution of all covered species within preserves. From the species identified during baseline surveys, a subset of species will be identified for trend monitoring. The following criteria (modified from Center for Natural Lands Management, 2001) will be used to identify this subset of species:

- The ability to count all individuals or sample populations in a manner that provides statistically relevant estimates of the species' response to both natural dynamics of resources and anthropogenic threats;
- Some indication, either through empirical data or conceptual modeling, that the species is sensitive to anthropogenic threats; and
- Natural history attributes, such as generation times and reproductive strategies that are consistent with a meaningful response to threats, allowing managers to respond to those threats and test methodologies to mitigate the impacts of those threats in a timely manner.

Species that don't meet these criteria will receive less intensive - status monitoring. The goals of Baseline Species Distribution Surveys, Trend Monitoring, and Status Monitoring are further described below, as is the strategy for developing methods.

7.1.1 Baseline Species Distribution Surveys

The purpose of baseline species distribution surveys will be to identify the distribution and approximate abundance of covered species within preserves. A sound understanding of covered species distribution will be used to inform management actions as well as to develop long-term monitoring protocols.

Methods

Methods have been developed by United States Geological Survey (described in Hathoway et al, 2004) that will be useful for assessing the distribution of most animal species which will require monitoring within preserves. These methods involve diverse observation techniques that provide a reasonably high level of detection probability for different species guilds. Plant distribution surveys will involve systematic surveying of all vegetation communities with the potential for occupancy by covered plant species. These surveys will occur during blooming periods that are optimal for detection of target species. For all surveys, the best available methods at the time should always be followed.

7.1.2 Trend Monitoring

As described above, certain species within each preserve will be selected for trend monitoring. The goals of trend monitoring will be to (1) identify population trends of the species being monitored; and (2) concurrently identify relationships between population trends, habitat conditions, and anthropogenic disturbances. To meet these goals, Trend Monitoring, Vegetation Community Monitoring (Section 7.2) and a compilation of information regarding anthropogenic

disturbance (e.g., trespass, altered fire regimes) will occur at the same sites and statistically significant relationships will be identified.

Methods

In order to develop these methods, it will be useful to develop conceptual models for target species. These models will depict each species basic life history, habitat relationships and potential anthropogenic threats. An understanding of these factors will be important in determining habitat and anthropogenic impact information that should be collected at trend monitoring sites to better inform management activities. Trend monitoring methods will be designed to detect statistically significant trends in population abundance. Where species populations are small, a census of all individuals may be the most appropriate. However, for larger populations, sampling strategies should be developed. Sampling will be designed such that samples will provide statistically meaningful information regarding trends of the overall populations. Development of these methods will require testing, evaluation and modification of different methods until methods that meet the goals discussed above are identified. In some cases, it may be determined that statistically valid trend monitoring is infeasible for some species that were initially selected for trend monitoring; in which case status monitoring should be conducted.

7.1.3 Status Monitoring

The goal of status monitoring will be to detect substantial changes in the distribution of species or their immediate surroundings. Where the distribution of a species is significantly contracting, more focused monitoring and research will be conducted to determine potential reasons for the decline in distribution.

Methods

Status monitoring will involve similar methods as those used during baseline species distribution surveys; however these methods will focus on the target species and will be modified so that statistically significant changes in species distributions can be identified. As with trend monitoring, development of these methods will require testing, evaluation and modification until methods that meet the goals discussed above are identified. These methods will also be combined with methods to evaluate the condition of the surrounding habitat in order to detect threats before populations of target species are negatively affected. Habitat quality monitoring will largely be done using methods described below for Vegetation Community Monitoring.

7.2 Vegetation Community Monitoring

The goal of vegetation community monitoring will be to maintain an ongoing inventory of the distribution and species composition and other basic characteristics of vegetation communities. To achieve this, the California Native Plant Society's Vegetation Rapid Assessment Protocol (California Native Plant Society, 2005) will be followed. This protocol consists of rapid assessment plots where data is gathered on native and non-native plant species composition, vegetation disturbance, soil type and other variables. Sampling sites will be identified using random sampling within stratified vegetation types and enough sites will be sampled within each major vegetation type so as to gain a statistically significant representation of vegetation community distribution and quality within preserve areas. Aerial photo interpretation will likely

aid in extrapolating data to unsampled areas. Using this methodology, baseline conditions will be assessed within five years of Plan implementation on existing preserve areas. Similarly, areas that are brought into the preserve system during Plan implementation will be subject to baseline surveys within five years. Habitat monitoring will be repeated at least once every five years.

7.3 Wildlife Corridor Management and Monitoring

The primary function of wildlife corridors is to provide migration routes between core biological areas. Target species for corridor use include California gnatcatchers and large mammals such as mountain lions and southern mule deer. Dispersal of California gnatcatchers will be monitored as part of species monitoring (Section 7.1). Corridor usage by mammals will be monitored as described below.

A program to monitor corridor usage by mammals has been developed for the San Diego Multiple Species Conservation Program (Conservation Biology Institute, 2003). A similar program will be followed for the Plan. To monitor corridor use, stations will be established at corridor pinch points (narrow segments along corridors frequently located at road underpasses). At these stations, track identification, scat identification, and video observation methods will be utilized to determine use by target mammal species.

Wildlife corridor monitoring will occur every five years along each major corridor. The scope of monitoring will be sufficient to determine if corridors are being utilized, but not to determine the extent of use (i.e., how many individuals of any given species use a corridor). Where corridors are not being utilized, various management actions are available including the following (modified from Conservation Biology Institute 2003):

- Provide vegetative cover where needed to encourage passage through pinch points.
- Monitor and control the deposition of sediment and debris in culverts and under low bridges, which may decrease the height of the culvert/bridge relative to ground surface in the corridor.
- Control the density of vegetation under bridges to maintain passable areas for wildlife.
- Install wing fencing to guide wildlife to road underpasses.

7.4 Regional Monitoring

There are several Habitat Conservation Plans being implemented in the region including subarea plans under the Multiple Habitat Conservation Plan (SANDAG, 2003) and the San Diego Multiple Species Conservation Program (MSCP, 1998). Ideally, monitoring protocols and study designs would be consistent throughout these plans. This would allow for larger, comparable datasets and would provide land managers with more useful information regarding population trends. However, widely accepted monitoring methods do not currently exist for most species.

Fortunately, there are several ongoing efforts to develop sound protocols for HCP monitoring programs in the region. For example, the United States Geological Survey has developed protocols for monitoring rare plants (McEachern et al, 2006) while San Diego State University is currently developing protocols for monitoring chaparral and coastal sage scrub communities

(Deutschman et al, 2007). Additionally, the United States Fish and Wildlife Service are currently developing a fauna monitoring plan. Consistency of methods throughout the Plan area and throughout the NCCP Region would allow for meaningful comparison of results among preserves and would help determine whether ecosystem changes can be attributed to changing conditions within individual preserves (e.g., local anthropogenic impacts) or changes that may be occurring at a larger spatial scale (e.g., climate change, drought). In general, ecosystem impacts that occur at more local (i.e., preserve level) scales will be easier to address through adaptive management than threats that occur at larger spatial scales. The County is an active participant in the development of monitoring methods for the San Diego Multiple Species Conservation Program. Once these methods are fully developed, and as feasible, these methods may be adapted for Plan preserves in place of the monitoring programs described in this document.

7.5 Minimizing Transport of Biological Materials

Inadvertent dispersal of biological material during monitoring activities can be detrimental to ecological resources as it may spread disease and non-native species to new areas. However, dispersal of native species is also a concern. Field researchers should be cognizant of the ways they may be transporting biological material, and should minimize the potential for transportation accordingly. For example, plant propagules may be transported to new areas attached to clothing, vehicles, or equipment; these items should be cleaned of all plant material before moving into new areas. Similarly, cysts and other material can be transported between aquatic environments attached to boots, vehicles or equipment. Items that come in contact with water should typically be washed with a bleach solution or ethanol solution.

8 PLANNING SEGMENTS (*SECTION UNDER DEVELOPMENT*)

Overview

Planning segments are identified either as core areas, linkages between core areas, or special areas. For each of the 23 planning segments (Figure 7-1; Appendix I) identified in this document, an area specific description and conservation goals are provided. This section, in association with previous sections of the FRMP, will provide interim management guidelines until ASMDs are developed. This section provides guidance on what sensitive resources might be on a given site within a planning segment and describes what management actions and monitoring should occur in each segment. As the preserve is assembled, this document will be used in creation of ASMDs.

Adaptability

Although this Plan is based upon the best available science, uncertainty remains. As new information related to species' distribution or abundance, avoidance or minimization techniques, or ecological processes is available, this document may be updated or superseded.

Applicability

The FRMP was created to guide preserve assembly and conservation decisions within specific areas covered by the Plan. However, the goals detailed herein are not explicitly regulatory in nature (refer to the Biological Mitigation Ordinance (BMO) for regulations). And thus the conservation goals for each planning segment are general goals and will not necessarily apply in all situations. The intent of this document is to identify the highest conservation priorities for each segment so that planners can prioritize resource protection where impacts are proposed or anticipated.

Preserve Design

Preserve Design criteria as outlined in the BMO must be met for all new discretionary projects within the PAMA that may have a significant effect on Covered Species or habitats. Preserve Design criteria are the basis for determining if a project has avoided impacts to sensitive resources to the maximum extent practicable. In addition, projects must meet specific linkage and corridor criteria. Nothing in this document should be construed to mean that all areas within planning segments must be avoided or that development should be reduced beyond what is allowed under current zoning; instead, this document should be used to help identify high priority conservation objectives, so that potential development may be sited in areas with lower priority for conservation.

LIST OF PAMA PLANNING SEGMENTS

CORE AREAS	37
1. DeLuz Core	37
2. Santa Margarita Core	38
3. Mount Olympus Core	39
4. Pala Core	41
5. Palomar Mountain Foothill Core	42
6. Hellhole Canyon Core.....	44
7. Guejito Creek Core	45
8. Daley Ranch – Lake Wohlford Core	46
9. San Marcos – Merriam Mountains Core.....	48
10. Elfin Forest Core.....	49
11. Harmony Grove Core.....	51
12. Mount Woodson Core.....	52
13. Ramona Grasslands Core and Linkage	53
14. San Pasqual Valley Core.....	55
15. Eastern Ramona Core	55
 SPECIAL AREAS.....	 57
16. San Elijo – Rancho Santa Fe Coastal Areas	57
17. Downtown Ramona Vernal Pool Complex.....	58
 LINKAGES ..	 60
18. Escondido - Temecula Linkage	60
19. Lower San Luis Rey River Linkage.....	61
20. Upper San Luis Rey River Linkage.....	62
21. Keys Creek Linkage.....	64
22. Moosa Canyon Linkage	65
23. Ramona – Blue Sky Linkage	66

CORE AREAS

8.1 DeLuz Core (1)

Area Description

Location – This core area consists of 25,598 acres in the northwestern corner of the County, north of Camp Pendleton.

Watersheds – San Juan and Santa Margarita

Existing preserves – The Bureau of Land Management (BLM) owns nearly 2,000 acres in this area; another 1,150 acres were recently conserved by the Department of Defense near Camp Pendleton between BLM and Cleveland National Forest (CNF) lands.

Adjacent natural areas – Camp Pendleton and the CNF; Santa Margarita Mountains; Santa Ana Mountains further north; connections to Santa Rosa Plateau Ecological Preserve are also formed from this area through De Luz Creek and the CNF. An important connection is also made to designated preserve areas in Orange County, which could be affected by the few private parcels on the western edge of this area.

Natural vegetation communities – 23,260 acres (91%) of this core area contain natural vegetation communities. The majority of the acreage is found in chaparral.

Sensitive species – Large population of Thread-leaf brodiaea (*Brodiaea filifolia*) is known from CNF and may be present in other suitable lands nearby. Grasshopper sparrows (*Ammodramus savannarum perpallidus*) have been observed in the grasslands in CNF inholdings. Along De Luz Creek, Least Bell's vireo (*Vireo bellii pusillus*), Southwestern willow flycatcher (*Empidonax traillii extimus*), and Arroyo toad (*Bufo californicus*) are known to occur. Stephens' kangaroo rat (*Dipodomys stephensi*) also has the potential to occur in grassland patches and is known to occur on adjacent Camp Pendleton and Fallbrook Naval Weapons Station. This is also downstream of the last known extant population (on Santa Rosa Plateau) of red-legged frog (*Rana aurora draytonii*) in the region.

Restoration opportunities – High priorities include restoration of disturbed habitat within the floodplain of De Luz Creek. Other priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed fragments in large contiguous patches of natural habitat.

Land use – Mostly vacant land; however, there are extensive patches of agriculture in this rural landscape. Larger agricultural areas have been excluded from the PAMA, as they are not expected to make significant contributions to regional conservation goals.

Parcelization – A small percentage of this area is composed of small parcels (i.e., smaller than 10 acres; most of these without existing structures) which could affect the preserve system if homes are built on each lot; however, since these lots are relatively few and scattered, it is not expected that individual homes will significantly affect the assembly of the preserve here.

Roads – De Luz Murrieta Road is the main road through this area. Most other roads are minor or private with little impact anticipated to wildlife movement.

Other – This is a first priority acquisition area as it is a large core area.

Conservation Goals

- Conserve grasslands, especially those supporting Stephens' kangaroo rat, Grasshopper sparrow, Thread-leaf brodiaea, or high numbers of raptors.
- Minimize impacts to the San Juan watershed (a high integrity watershed with little developed area and few roads).
- Protect intact riparian habitat surrounding De Luz Creek for sensitive species, water quality, and connectivity to Riverside County.
- Protect areas adjacent to undeveloped public lands, such as those owned by the County, BLM, CNF, and Camp Pendleton, as well as lands preserved through the Western Riverside MSHCP and Southern Orange County HCP.

8.2 Santa Margarita Core (2)

Area Description

Location – This core area consists of 8,211 acres north of Fallbrook. Santa Margarita watershed boundary forms the southeastern boundary and Interstate 15 forms the eastern boundary.

Watershed – Santa Margarita. The dominant feature of this area is the Santa Margarita River running through the middle of the segment. This watershed is important for a variety of purposes, including supplying drinking water to Camp Pendleton.

Existing preserves – The BLM owns approximately 90 acres and San Diego State University (SDSU) owns approximately 240 acres that it manages as part of the Santa Margarita Ecological Reserve. A portion of this reserve is also located in Riverside County. The Fallbrook Land Conservancy owns two preserves in this area totaling 120 acres.

Adjacent natural areas – Although outside the Plan area, the Fallbrook Public Utility District owns a large block of open space (approximately 1,400 acres) around the Santa Margarita River. Sandia Creek is also a planned linkage in the Western Riverside MSHCP to the Santa Rosa Plateau Ecological Preserve.

Natural vegetation communities – 6,141 acres (74%) of this core area contain natural vegetation communities. Coastal sage scrub and chaparral are the two dominant communities. Chaparral occurs mainly on the eastern half of the segment where mafic soils occur. There is also a patch of grassland (approximately 200 acres) that may contain significant biological resources.

Sensitive species – There are known populations of Parry's tetracoccus on soils in this area. The Santa Margarita River is host to several sensitive species – Arroyo toad, Least Bell's vireo, Southwestern willow flycatcher, Western spadefoot toad, and California newt.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed fragments in large contiguous patches of natural habitat. Restoration activities (e.g., invasive species control) along major streams, such as the Santa Margarita River or Sandia Creek, would also be highly valuable.

- Land use – Rural residential uses with extensive agriculture are the dominant land uses, both of which are anticipated to continue in the area. Several locations in the western portion are dominated by agriculture (mostly avocado and citrus groves). There are several higher-density residential areas near Interstate 15, which constrain the preserve design.
- Parcelization – There are many small parcels (i.e., smaller than 10 acres; most of these with existing structures) which could affect the preserve system if homes are built on each lot. Since these parcels are mostly scattered among agricultural lands, however, it is anticipated that agricultural lands will provide an adequate buffer between residential and natural preserve areas.
- Roads – Interstate 15, on the eastern boundary, limits connectivity directly to the east, but connectivity is expected to be maintained into Riverside County's planned open space. Sandia Creek Road is the only other major road in the area, mostly running parallel to Sandia Creek.
- Other – Fallbrook Public Utility District currently owns approximately 1,400 acres of mostly vacant land around the Santa Margarita River and Sandia Creek. This area is likely to remain as open space; however, the County may not have the ability to affect land use changes here. This is a first priority acquisition area, as it is a large core area.

Conservation Goals

- Conserve grasslands, especially those supporting Stephens' kangaroo rat or Grasshopper sparrow.
- Conserve upland habitats on mafic soils supporting sensitive plant species, such as Parry's tetracoccus.
- Conserve cliff-faces utilized by sensitive species, such as raptors, swallows, and bats, that nest or roost in these areas.
- Conserve riparian habitat of Santa Margarita River and Sandia Creek for sensitive species and water quality.
- Conserve a wildlife corridor along Sandia Creek to connect to the planned open space connection through Riverside County to the Santa Rosa Plateau. This corridor should span the canyon, rim to rim.
- Conserve areas adjacent to undeveloped public lands, such as those owned by the County, BLM, SDSU, Fallbrook Land Conservancy, and Fallbrook Public Utility District, and lands preserved in Riverside County (e.g., Santa Margarita Ecological Reserve).

8.3 Mount Olympus Core (3)

Area Description

- Location – This core area consists of 9,356 acres east of the community of Rainbow, north of Pala Reservation, and south of Pechanga Reservation (Riverside County).
- Watershed – Mostly within the San Luis Rey, with some parts in the Santa Margarita.
- Existing preserves – The County owns 712 acres around Mount Olympus. The BLM owns 265 acres, with more across the Riverside County line. A Conceptual Area

Protection Plan has been prepared for the Mount Olympus and Magee Ridge area, which will facilitate acquisition efforts there in the future.

Adjacent natural areas – Agua Tibia Mountains owned by the CNF are to the east. This is part of an important wildlife movement route between the Santa Ana Mountains and mountain ranges to the east, including Palomar Mountain, allowing movement and genetic exchange for a substantial number of species, including large mammals such as mule deer and mountain lions.¹

Natural vegetation communities – 8,835 acres (94%) of this core area contain natural vegetation communities. Along Magee Ridge the community is mostly chaparral on the mafic soils. There are also significant areas of coastal sage scrub and riparian habitat, along with some coniferous forest and oak woodlands near the Agua Tibia Mountains and Engelmann oak woodlands on Mount Olympus.

Sensitive species – Gander's butterweed (*Packera ganderi*) is known along Magee Ridge. Parry's tetracoccus (*Tetracoccus dioicus*) is known on Magee Ridge and Mount Olympus. Tricolored blackbird has been observed near the Pala Reservation. There is potential for Arroyo toad to occur along Pala Creek.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed fragments in large contiguous patches of natural habitat.

Land use – Mostly rural residential uses. There are a few large patches of agriculture along Magee Ridge, orchards and grazing land, and associated agricultural ponds. Large areas (several square miles) on the east end of this planning unit are in agricultural preserves (i.e., Williamson Act contracts).

Parcelization – Small parcels occur along Pala Temecula Road and near the Riverside County border; however, buildout of this area is not expected to significantly affect the majority of this core area.

Roads – Pala Temecula Road is the only major road through this core area, although a series of smaller roads exists through much of this area.

Other – Indian reservations to the north and south limit the County's ability to assure this area's connectivity to other natural areas. This is a first priority area for acquisitions to conserve plants restricted to mafic soils.

Conservation Goals

- Conserve sensitive vegetation communities including: Oak woodlands and coniferous forests.
- Conserve large contiguous habitat blocks around Mount Olympus and Magee Ridge.
- Conserve upland habitats on mafic soils supporting sensitive plant species, such as Parry's tetracoccus and Gander's butterweed.
- Conserve cliff-faces utilized by sensitive species, such as raptors, swallows, and bats, that nest or roost in these areas.
- Minimize impacts to the Santa Margarita River, Trujillo Creek, Magee Creek, and Pala Creek watersheds. These are high integrity watersheds with little developed area and few roads.

¹ For details refer to: Luke, C., K. Penrod, C. Cabanero, P. Beier, W. Spencer, and S. Shapiro. 2004. A linkage design for the Santa Ana – Palomar Mountains connection. Unpublished report produced by San Diego State University Field Stations Program and South Coast Wildlands.

- Conserve riparian habitat and adjacent uplands of Pala Creek and its tributaries to protect Arroyo toad habitat and water quality.
- Conserve occupied breeding and foraging habitat for Tricolored blackbirds.
- Maintain connectivity between Agua Tibia Mountains and the Santa Ana Mountains. This is a regionally important east-west landscape linkage for large mammals through this core area.

8.4 Pala Core (4)

Area Description

Location – This core area consists of 8,089 acres east of Interstate 15, and north and south of the San Luis Rey River. The Pala Reservation forms the eastern boundary and the ridge west of Rice Canyon forms the western boundary.

Watershed – San Luis Rey.

Existing preserves – Heights of Pala Mesa mitigation bank (approximately 330 acres).

Adjacent natural areas – The Mount Olympus core area is to the north, the San Luis Rey River runs through the core area as part of an east-west linkage, and natural areas also occur along Keys Creek to the south. Coastal sage scrub habitat occurs to the south, north, and west in patches along Interstate 15.

Natural vegetation communities – 5,899 acres (73%) of this core area contain natural vegetation communities. The dominant community is coastal sage scrub with some chaparral scattered or in blocks on the east side. There is a large amount of riparian habitat, mainly along the San Luis Rey River.

Sensitive species – This area supports a significant population of California gnatcatchers. In addition, connectivity and interbreeding between the northern and southern populations of inland California gnatcatchers of the Plan area is largely provided by patches of coastal sage scrub along Interstate 15 (Escondido-Temecula Linkage) and in Rice Canyon within this core area. The San Luis Rey River supports high value habitat for Arroyo toad (including known breeding sites and adjacent uplands (including such as citrus groves), least Bell's vireo, and Southwestern willow flycatcher. The southwestern pond turtle and Tricolored blackbird may also occur in this area. The San Diego cactus wren is known from several locations on north and south slopes of the San Luis Rey River. Chaparral beargrass and Parry's tetradlea have been reported in several locations on hills north of the San Luis Rey River and around Rice Canyon.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for Arroyo toad, least Bell's vireo and Southwestern willow flycatcher along the San Luis Rey River, as well as restoring disturbed fragments in large contiguous patches of natural habitat.

Land use – Much of this area is a natural state. The disturbed areas consist mostly of residential dwellings with small agricultural operations. Various types of agriculture exist in this area including: citrus orchards, row crops, and pastures adjacent to the San Luis Rey River, and nursery crops along Rice Canyon. Lake Rancho Viejo is the major urban development within this core area. A large gravel quarry is currently operating in the San Luis Rey River floodplain. There

is also a proposal for a landfill in Gregory Canyon that will impact the canyon and approximately 1,300 acres of adjacent natural open space.

Parcelization – Small parcels with existing houses exist along Rice Canyon and the San Luis Rey River, although there is not extensive parcelization.

Roads – Rice Canyon Road and Highway 76 form significant barriers to wildlife movement between the San Luis Rey River and upland habitat to the north.

Other – San Diego cactus wren habitat is a priority for acquisition.

Conservation Goals

- Conserve chaparral on mafic soils that supports sensitive plant species, such as Chaparral beargrass and Parry's tetracoccus.
- Protect occupied San Diego cactus wren habitat.
- Conserve cliff-faces utilized by sensitive species, such as raptors, swallows, and bats, which contain nests or roosts.
- Protect the San Luis Rey River floodplain. Minimize impacts to riparian and upland habitat to protect water quality and habitat for sensitive species, such as Steelhead trout, Pacific lamprey, Arroyo toad, Western spadefoot toad, Southwestern pond turtle, least Bell's vireo, Southwestern willow flycatcher, and Tricolored blackbird. Natural flow regimes, including lack of barriers, are important to allow for migration of species, such as Steelhead trout or Pacific lamprey.
- Maintain north-south connectivity of California gnatcatcher habitat from the Heights of Pala Mesa mitigation bank through the slopes of Rice Canyon and to the hills and banks adjacent to the San Luis Rey River.
- Maintain connectivity between Couser Canyon and Rice Canyon across Highway 76 for wildlife movement through natural and agricultural lands.
- Conserve areas adjacent to the Heights of Pala Mesa mitigation bank.

8.5 Palomar Mountain Foothill Core (5)

Area Description

Location – This core area consists of 8,656 acres near Pauma Valley at the base of Palomar Mountain, and south of the Pala and Pauma Reservations.

Watershed – San Luis Rey.

Existing preserves – The California Department of Fish & Game (CDFG) owns 463 acres on the eastern end of this planning segment.

Adjacent natural areas – This is a transition area between the San Luis Rey River valley and Palomar Mountain; however, wildlife movement is largely restricted to drainages that run through agricultural lands in the Upper San Luis Rey River Linkage. Palomar Mountain is mostly publicly owned open space. Although there is development pressure adjacent to it, the San Luis Rey River, is likely to remain a largely natural landscape feature in this area. The Yuima Municipal Water District owns 1,126 acres, intended to be protected for watershed and drinking water (this area is excluded from the Plan area) and is adjacent to a parcel owned by CDFG.

Natural vegetation communities – 8,222 acres (95%) of this core area contain natural vegetation communities. Diverse vegetation communities are found in this area.

Grasslands are present at high elevations and coastal sage scrub (more dominated by white sage) is present on slopes, along with oak woodland, chaparral, and coniferous forest.

Sensitive species – The San Luis Rey River supports Arroyo toad and historically, Steelhead trout. California gnatcatchers are present south of the Pala Reservation in an area mapped as grassland (probably sparse coastal sage scrub), but is not likely in the white sage dominated habitats on the lower slopes of Palomar Mountain. San Diego cactus wren is known at one location north of the Pauma Reservation. Southwestern willow flycatchers have a significant population along the San Luis Rey River near on the eastern boundary of this core area. There is a high potential for Stephens' kangaroo rat in the grasslands, as well.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed fragments in large contiguous patches of natural habitat.

Land use – Mostly natural vegetation communities with some rural residential and agricultural uses. Future development in this area will mostly likely be limited by steep topography and limited water availability. Portions of this area are actively grazed by cattle.

Parcelization – Very little parcelization has occurred except in Rancho Cuca within the La Jolla Reservation, where subdivision has taken place. However, many of these lots have not yet been developed and the fact that this subdivided land is clustered in one area should not significantly affect the final preserve functionality.

Roads – Highway 76 runs through the eastern portion of this area. South Grade Road switches back and forth through a small part of the area as it heads up Palomar Mountain.

Other – The La Jolla Reservation is to the east, potentially limiting future connectivity. This area is outside the County Water Authority boundary, limiting growth potential. Watershed lands owned by the Yuima Municipal Water District are likely to remain as open space; however, the County may not have the ability to affect land use changes there. San Diego cactus wren habitat is first priority for acquisition.

Conservation Goals

- Conserve sensitive vegetation communities including: Oak woodlands and coniferous forests.
- Conserve habitat occupied by San Diego cactus wren habitat, southwestern willow flycatcher.
- Protect grasslands, especially those supporting Stephens' kangaroo rat, Grasshopper sparrow, or high numbers of raptors.
- Conserve the San Luis Rey River and Pauma Creek watersheds, both high integrity watersheds with little development and few roads.
- Minimize impacts to riparian and upland habitat in the San Luis Rey River and Pauma Creek floodplains to protect water quality and habitat for sensitive species, such as Rainbow/Steelhead trout, Pacific lamprey, Arroyo toad, Western spadefoot toad, least Bell's vireo, and Southwestern willow flycatcher. Maintain natural flow

- regimes, including lack of barriers, to allow for migration of species, such as Steelhead trout or Pacific lamprey.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between the San Luis Rey River and public lands on Palomar Mountain.
 - Minimize development in areas adjacent to undeveloped public lands such as those owned by the County, CNF, CDFG, and Yuima Municipal Water District.

8.6 Hellhole Canyon Core (6)

Area Description

Location – This core area consists of 9,186 acres east of Valley Center and south of the Rincon and La Jolla Reservations.

Watershed – San Luis Rey (watershed boundary forms south and east boundary of planning unit).

Existing preserves – The County’s Hellhole Canyon Open Space Preserve (Hellhole) is 1,755 acres. The BLM owns about 3,214 acres adjacent to Hellhole.

Adjacent natural areas – CNF to the east and Guejito Creek Core Area to the south and east.

Natural vegetation communities – 8,795 acres (96%) of this core area contain natural vegetation communities. Mostly this consists of higher elevation (1,800 to 3,100 feet) coastal sage scrub and chaparral. Oak woodlands and grasslands occur in the eastern part of the planning segment near 3,000 foot elevation.

Sensitive species – A band of mafic soils, which often supports sensitive plant species, runs across most of the planning unit. Bell’s sage sparrow, Rufous-crowned sparrow, and Grasshopper sparrow are all found in the area. Arroyo toads have been documented along the San Luis Rey River on the west end of the planning unit. Chaparral beargrass, Engelmann oaks, California gnatcatcher, and Harbison’s dun skipper are also known from the planning segment. Stephens’ kangaroo rat may occur within area grasslands.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed fragments in large contiguous patches of natural habitat. Other high priority areas include disturbed riparian areas along major streams, such as the San Luis Rey River and Paradise Creek. Establishing populations of host plants for the Quino checkerspot butterfly in this area may aide the recovery of this species, if it is found to be present in the vicinity. Establishing or restoring populations of host plants for Harbison’s dun skipper in this area would help establish new populations and strengthen existing populations.

Land use – Mostly rural and natural lands with little change anticipated. There are a few areas of agriculture, mainly grazing with a small number of orchards/row crops located around the edges of the planning unit.

Parcelization – Limited numbers of small parcels occur, at the south end of Hellhole Canyon Open Space Preserve along Santee Lane, and most contain existing structures.

Roads – Valley Center Road passes through the western edge.

Other – This area is mostly outside the County Water Authority service area, limiting the potential for future human population growth here, unless an alternative water source is utilized.

Conservation Goals

- Conserve Harbison's dun skipper habitat, including host plants (e.g., *Carex spissa*).
- Conserve Bell's sage sparrow habitat, including coastal sage scrub and chaparral areas large enough to maintain species.
- Conserve Golden eagle nesting sites.
- Conserve cliff-faces utilized by sensitive species, such as raptors, swallows, and bats.
- Protect chaparral on mafic soils supporting sensitive plant species, such as Chaparral beargrass.
- Protect grasslands, especially those supporting Stephens' kangaroo rat, Grasshopper sparrow, or high numbers of raptors.
- Protect the Hell Creek and Paradise Creek watersheds, both high integrity watersheds with little development and few roads.
- Protect riparian and upland habitats along Hell Creek and Paradise Creek to protect water quality and habitat for sensitive species, such as Steelhead trout, Pacific lamprey, Southwestern pond turtle, Arroyo toad, Western spadefoot toad, least Bell's vireo, Southwestern willow flycatcher, and Tricolored blackbird. Maintain natural flow regimes, including lack of barriers, to allow for migration of species, such as Steelhead trout and Pacific lamprey.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between Hellhole Canyon and Paradise Creek.
- Minimize impacts in areas adjacent to undeveloped public lands, such as Hellhole Canyon, CNF, and BLM lands.

8.7 Guejito Creek Core (7)

Area Description

Location – This core area consists of 17,656 acres northeast of Escondido and north of the San Pasqual Valley.

Watershed – San Dieguito. The Guejito Creek subwatershed basin makes up this planning unit and has little existing disturbance.

Existing preserves – None.

Adjacent natural areas – CNF along the majority of the eastern boundary, Lake Wohlford core area to the west, San Pasqual Valley to the South, and Boden Canyon Ecological Reserve to the southeast.

Natural vegetation communities – 17,358 acres (98%) of this core area contain natural vegetation communities. The main vegetation communities are chaparral, oak woodlands, and grasslands. There are also several hundred acres of wetlands, coastal sage scrub, and coniferous forest.

Sensitive species – Some mafic soils are present which are known to support rare plant species. There are documented observations of Engelmann oaks, Arroyo toads, Southwestern pond turtle, Grasshopper sparrow, California gnatcatcher, least

Bell's vireo, Stephens' kangaroo rat, and Arroyo chub. Orcutt's brodiaea is also likely to occur in this area.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, especially where grazing has adversely impacted habitats. Establishing populations of host plants for the Quino checkerspot butterfly in this area may aide the recovery of this species.

Land use – The majority of this area is grazed, natural land. There is also a limited area comprised of orchards.

Parcelization – There is extremely limited parcelization in this area and most parcels are over 40 acres in size.

Roads – No major roads exist in this area.

Other – This is a first priority area for acquisition of San Diego cactus wren, Stephens' kangaroo rat, or Arroyo toad habitat and for large patches of grassland.

Conservation Goals

- Minimize impacts to the following sensitive habitats: Vernal pools, Alkali meadows, Coniferous forests, particularly at higher elevations (e.g., above 2,500 feet), Coast live oak woodlands, Engelmann oak woodlands, particularly in the northern portion of the planning unit, Grasslands (meadows), particularly at higher elevations (e.g., above 2,500 feet), especially those that are native or support Stephens' kangaroo rat, Grasshopper sparrow, or large numbers of raptors, and Chaparral on mafic soils supporting sensitive plant species, such as Chaparral beargrass and Parry's tetracoccus.
- Protect Golden eagle nesting sites and occupied San Diego cactus wren habitat.
- Minimize impacts to the Guejito and Paradise Creek watersheds, both high integrity watersheds with little development and few roads.
- Minimize impacts to riparian and upland habitat of Guejito and Paradise Creek for water quality and sensitive species, such as Arroyo toad, Southwestern pond turtle, least Bell's vireo, Southwestern willow flycatcher, San Diego ambrosia, Yellow-breasted chat, White-faced ibis, and Arroyo chub.
- Maintain connectivity between lower elevation valleys, mesas, and higher elevation mountain zones to accommodate shifts in species distributions due to climate fluctuation.
- Minimize impacts in areas adjacent to undeveloped public lands such as San Pasqual Valley, Hellhole Canyon Open Space Preserve, and CNF.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals.

8.8 Daley Ranch – Lake Wohlford Core (8)

Area Description

Location – This core area consists of 10,889 acres northeast of Escondido on lands surrounding Daley Ranch and Lake Wohlford.

Watershed – San Dieguito and Carlsbad.

Existing preserves – The BLM owns about 80 acres south of Lake Wohlford. Some private open space also occurs in this area.

- Adjacent natural areas – City of Escondido lands form most of this core area, with open space areas along Valley Center Road and around Lake Wohlford and Daley Ranch. The Guejito Creek Core Area is to the east and San Pasqual Valley to the southeast.
- Natural vegetation communities – 9,796 acres (90%) of this core area contain natural vegetation communities. These communities consist mostly chaparral and oak woodlands (including Engelmann oak) with some coastal sage scrub west of Daley Ranch.
- Sensitive species – Mafic soils, which often support rare plant species, occur north of Lake Wohlford. Orcutt's brodiaea occurs on adjacent city lands (Daley Ranch and east of Valley Center Road) and is likely to occur in this area, as well. Engelmann oaks are a common feature here, forming woodlands where they are the dominant feature in areas. Stephens' kangaroo rat is known to occur on the eastern edge of this area on Rancho Guejito.
- Restoration opportunities – Areas providing potential habitat for sensitive species, such as those listed above, would be high priorities, as well as disturbed patches within this largely undisturbed core area and around the Daley Ranch Preserve.
- Land use – Predominantly rural lands. Agriculture is present in a few scattered blocks around Lake Wohlford, with row crops and pastures to the east and pastures and livestock to the south of it.
- Parcelization – Very few small parcels (i.e., under 10 acres) occur here. Exceptions exist on the west side of Daley Ranch, on the northern end of the planning unit. There are also a number of existing homes north of Lake Wohlford.
- Roads – Valley Center Road (which has several wildlife undercrossings) and Lake Wohlford Road.
- Other – San Pasqual Reservation is within this planning unit to the north; connectivity of natural lands in these areas is outside County control.

Conservation Goals

- Minimize impacts to the following sensitive habitats: Oak woodlands, grasslands, especially those supporting Stephens' kangaroo rat or large numbers of raptors and upland habitat on mafic soils that supports sensitive plant species, such as Chaparral beargrass and Parry's tetradlea (particularly north of Lake Wohlford).
- Maintain connectivity of California gnatcatcher habitat (coastal sage scrub), including line of sight between adjacent patches of coastal sage scrub when continuous patches are absent.
- Minimize impacts to the upper San Dieguito Creek watershed, a high integrity watershed with little development and few roads, and a tributary to Santa Ysabel Creek.
- Minimize impacts to riparian and upland habitats along Santa Ysabel Creek for water quality and sensitive species.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between preserved habitats (Daley Ranch and Lake Wohlford).

8.9 San Marcos – Merriam Mountains Core (9)

Area Description

Location – This core area consists of 7,891 acres north of San Marcos and west of Interstate 15.

Watersheds – Carlsbad and San Luis Rey.

Existing preserves – Scattered smaller open space easements near Gopher Canyon Road.

Adjacent natural areas – San Luis Rey River and planned open space (mostly coastal sage scrub) within the Multiple Habitat Conservation Program (MHCP).

Natural vegetation communities – 6,766 acres (86%) of this core area contain natural vegetation communities. Merriam Mountains is mostly granitic chaparral, whereas San Marcos Mountains are mafic soils with a mix of chaparral and coastal sage scrub. There is also an isolated patch of coastal sage scrub near Twin Oaks.

Sensitive species – Mafic soils in the San Marcos Mountains make it an important location for conservation of rare plants endemic to the soil type. Documented sensitive plant species include: San Diego thornmint (found in open space for the Palisades project and is the northernmost known population); Spineshrub (northernmost population known in the Plan area); Parry's tetradlea (southern end of the San Marcos Mountains); and Felt-leaf rock-mint (San Marcos Mountains). Engelmann oaks area also scattered throughout. Sensitive animal species documented in the area include: Southwestern pond turtle (South Fork Gopher Canyon); Bell's sage sparrow (north end of San Marcos Mountains); California gnatcatcher (San Marcos Mountains, near Twin Oaks and Interstate 15); and least Bell's vireo (Gopher Canyon and Bluebird Canyon).

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed fragments in large contiguous patches of natural habitat.

Land use – Rural residential uses in the center, with more semi-rural uses near Gopher Canyon and Twin Oaks. A hardlined development project is proposed in the Merriam Mountains (Merriam Mountains project). Several other projects are currently proposed: San Marcos Highlands, Polo Club, Morris Ranch, and Palisades (which has an approved tentative map). Agriculture is fairly common, with avocado groves south of Deer Springs Road, row crops east to Vista Way and Gopher Canyon Road, and several other scattered smaller groves.

Parcelization – Lands in the north part of the segment have been subdivided in association with the Morris Ranch and Polo Club development projects. On the east side, the Palisades project has been approved. Development of these projects will further constrain the connection between the San Marcos Mountains Core Area and the San Luis Rey River to the north. The middle of the San Marcos Mountains is one of the few remaining areas with larger parcels. The rest of the area contains many small parcels (i.e., smaller than 10 acres; most without existing structures). If homes are built on each of these lots, the preserve system could be affected, particularly at the margins of the PAMA, leaving limited opportunities for conservation in this area. However, it is still possible to

preserve a core block of habitat in this area and maintain viable populations of sensitive species.

Roads – Major roads include Twin Oaks Valley Road, Gopher Canyon Road, and Deer Springs Road.

Other – There is about 1,100 acres of open space planned as part of the Merriam Mountains project. Areas with gabbro-derived soils are a first priority for acquisitions to conserve sensitive plant species.

Conservation Goals

- Minimize impacts to the following sensitive habitats: Oak woodlands, coastal sage scrub (particularly in Twin Oaks) to maintain populations and connectivity of California gnatcatcher and other coastal sage scrub-dependent species, and chaparral on mafic or gabbro soils that supports sensitive plant species, such as Chaparral beargrass and Parry's tetradlea, San Diego thornmint (particularly in San Marcos Mountains), or Spineshrub.
- Maintain north-south connectivity of California gnatcatcher habitat from the Heights of Pala Mesa mitigation bank through the slopes of Rice Canyon to the hills and mitigation banks adjacent to the San Luis Rey River.
- Maintain east-west connectivity of natural habitats for dispersal of scrub community birds.
- Conserve cliff-faces utilized by sensitive species, such as raptors, swallows, and bats.
- Protect riparian and upland habitat of Gopher Canyon Creek for water quality and sensitive species such as Southwestern pond turtle and least Bell's vireo.
- Link future preserves to create a large contiguous preserve area.
- Limit light pollution to create dark night skies for nocturnal wildlife movement.

8.10 Elfin Forest Core (10)

Area Description

Location – This core area consists of 2,823 acres south of San Marcos and north of Del Dios Highway. Also includes patches of the unincorporated area around Lake San Marcos.

Watershed – Carlsbad.

Existing preserves – There are several conserved areas along Escondido Creek (for which a Conceptual Area Protection Plan has been prepared covering most of planning unit). Existing mitigation areas include Santa Fe Creek open space, Onyx Ridge, and Cielo del Norte. The Escondido Creek Conservancy manages much of the open space in this area. There are also open space easements in several locations around the San Marcos landfill.

Adjacent natural areas – Open space associated with the MHCP is located to the northwest in Carlsbad and San Marcos. The South County MSCP Subarea is to the south, across Del Dios Highway, where the Lake Hodges core area forms a large open space preserve. Connectivity along Escondido Creek is also of key importance.

Natural vegetation communities – 2,382 acres (84%) of this core area contain natural vegetation communities. The predominant vegetation community is coastal sage

scrub. Other than on Camp Pendleton, this is the largest intact area of coastal sage scrub in northwest San Diego County with close proximity to the coast. There is also some mixed chaparral and coastal sage scrub/chaparral habitat.

Sensitive species – California gnatcatchers are abundant here. Densities of coastal sage scrub dependent species, such as California gnatcatcher, are significantly higher in this area than in more inland areas and this makes the area an important location for coastal sage scrub dependent species. This is also the main area where Spineshrub is known to occur within the Plan area. Mafic soils, known to support sensitive plant species, occur on the western half of this area and sensitive plant species known to occur here include: Orcutt's brodiaea, Wart-stem lilac, Sticky dudleya (several key locations), San Diego goldenstar (only mapped location in Planning Area), and Engelmann oaks. Sensitive animal species from this area include: Grasshopper sparrow, Bell's sage sparrow, least Bell's vireo and Southwestern pond turtle along Escondido Creek. The San Diego cactus wren has been documented here, but is presumed to have been extirpated in the 1980s. Hermes copper was recently documented in the southern part of this planning unit.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for California gnatcatcher, least Bell's vireo, and Southwestern willow flycatcher. Incorporation of spiny redberry into restoration palettes could benefit the Hermes copper.

Land use – This area is mostly rural and semi-rural residential, with little change anticipated except for some potential agricultural expansion. There is a limited amount of agriculture present. Existing development is present in the town of Harmony Grove. One hardline project, Cielo del Norte (an approved project), is located mostly within this area.

Parcelization – Very developed and parcelized. Most of the parcels surrounding lands owned by Olivenhain Municipal Water District are less than 10 acres, although many remain vacant. The areas around Lake San Marcos are quite parcelized and it is likely that mainly backyard open space will exist, mainly around riparian areas.

Roads – Major existing roads are Elfin Forest Road and Harmony Grove Road.

Other – The Second San Diego Aqueduct runs north-south through the middle of this core area. Olivenhain Municipal Water District lands are not under the County's control.

Conservation Goals

- Protect the following sensitive species: San Diego goldenstar, Engelmann oaks
- Protect cliff-faces utilized by sensitive species, such as raptors, swallows, and bats, that nest or roost in these areas and several rare plant species, such as Sticky dudleya.
- Minimize impacts to the following sensitive habitats: chaparral on mafic soils supporting sensitive plant species, such as Parry's tetracoccus; coastal sage scrub to maintain populations and connectivity of coastal sage scrub-dependent species, including a core population of California gnatcatcher.

- Escondido Creek floodplain. Riparian and upland habitat to protect water quality and sensitive species habitat, including for Southwestern pond turtle and least Bell's vireo, including for the San Elijo Lagoon.
- Removal of non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, crayfish, bull frogs, etc.), particularly to enhance habitat quality along Escondido Creek.
- Maintain connectivity to other preserve areas, such as MHCP preserve areas to the north and west, South County MSCP to the southeast, and along Escondido Creek canyon (east-west) by minimizing roads and maintaining natural habitat.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between preserved habitats. Along Escondido Creek canyon, the corridor should span the canyon, rim to rim, as much as possible.
- Link future preserves to create a large contiguous preserve area.

8.11 Harmony Grove Core (11)

Area Description

Location – This core area consists of 4,609 acres adjacent to Elfin forest and northwest of Lake Hodges.

Watershed – Carlsbad.

Existing preserves – Del Dios Highlands.

Adjacent natural areas – Escondido Creek, which runs through the area and connects it to the east and west and Olivenhain Municipal Water District properties (such as the Elfin Forest Reserve).

Natural vegetation communities – 4,018 acres (87%) of this core area contain natural vegetation communities. The vast majority of the area supports chaparral, with riparian vegetation along Escondido Creek and other waterways.

Sensitive species – Encinitas baccharis occurs in a few locations and wart-stem lilac is abundant forming dense stands. Making this is an important area for both species. Mafic soils occur around Harmony Grove and in the northern portion of this planning unit that may support sensitive plant species.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed fragments in large contiguous patches of natural habitat.

Land use – Mostly rural and natural lands with some existing agriculture. Harmony Grove Village, a hardline project, was approved in 2007. Other projects are proposed south of Harmony Grove Village, which have the potential to compromise conservation goals. Cielo del Norte is a hardline project partially within this area.

Parcelization – Small parcels occur, mostly around the edges of this planning segment, along Harmony Grove Road and south of Olivenhain Reservoir along Mount Israel Road.

Roads – Harmony Grove Road is the only major road in this area, although several smaller roads exist.

Other – Olivenhain Municipal Water District lands are not under County control.

Conservation Goals

- Protect the following sensitive species: Encinitas baccharis, including different genders to ensuring reproductive capability; Wart-stem lilac, particularly dense stands.
- Minimize impacts to the following sensitive habitats: Chaparral on mafic soils supporting sensitive plant species, such as Parry's tetradlea.
- Protect cliff-faces utilized by sensitive species, such as raptors, swallows, and bats.
- Protect the Escondido Creek floodplain. Conserve riparian and upland habitat along Escondido Creek for water quality and sensitive species such as: Southwestern pond turtles and least Bell's vireo. Maintain natural flow regimes to maintain functionality of the San Elijo Lagoon.
- Maintain connectivity, particularly east-west, along Escondido Creek canyon by minimizing road and maintaining natural habitat. This corridor should span the canyon, rim to rim, as much as possible. Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between preserved habitats.
- Removal of invasive, non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, crayfish, bull frogs, etc.), particularly to enhance habitat quality along Escondido Creek.
- Link future preserves to create a large contiguous preserve area.

8.12 Mount Woodson Core (12)

Area Description

Location – This core area consists of 1,058 acres between Lake Ramona and Mount Woodson. Highway 67 forms the eastern boundary.

Watershed – San Dieguito.

Existing preserves – Some private open space areas on the north side of Mount Woodson.

Adjacent natural areas – This planning segment is relatively small, but is part of a larger block of preserved habitat in Poway (Blue Sky Ecological Reserve and City of Poway lands around Lake Poway). Iron Mountain is to the east.

Natural vegetation communities – 891 acres (84%) of this core area contain natural vegetation communities. The vegetation communities consist mostly of chaparral, with some coastal sage scrub.

Sensitive species – Encinitas baccharis occurs on peak of Mount Woodson among boulders and along roads and trails.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for Encinitas baccharis.

Land use – Mostly natural land and rural agricultural lands. Little change in land use is expected due to a variety of constraints on development, namely steep slopes. There are extensive areas of agriculture (mostly avocado groves and nurseries) south of Lake Ramona.

Parcelization – Small parcels occur south of Lake Ramona and are associated with most of the agriculture in this planning unit.

Roads – There are no major roads in this area.

Other – The City of San Diego owns most of Mount Woodson, which is not a part of the Plan area. The Mount Woodson HOA owns some open space areas on the north end of Mount Woodson. Communication towers at the peak of Mount Woodson create potential constraints for conservation due to fuel management requirements around these structures. This area is also a popular recreational destination for rock climbers and hikers.

Conservation Goals

- Protect the following sensitive species: Oak woodlands and Encinitas baccharis, including different genders to ensuring reproductive capability.
- Conserve cliff-faces utilized by sensitive species, such as raptors, swallows, and bats.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between preserved habitats and the Blue Sky Ecological Reserve and to preserved lands around Iron Mountain.

8.13 Ramona Grasslands Core and Linkage (13)

Area Description

Location – This core area consists of 7,396 acres including the Santa Maria Valley, east of the town of Ramona. The linkage begins east of Highway 67.

Watershed – San Dieguito.

Existing preserves – Over 3,000 acres have already been preserved in the Ramona Grasslands and this continues to be a high priority area for preservation. Much of the area is preserved, including properties such as Cagney, Oak Country, Davis-Eagle Ranch, Gildred, Hardy, and portions of Montecito Ranch.

Adjacent natural areas – Connects to San Pasqual Valley to the north and southeast across Highway 67 (where it becomes a linkage) to the Barnett Ranch and Iron Mountain preserve areas.

Natural vegetation communities – 6,180 acres (84%) of this core area contain natural vegetation communities. This area contains large areas of non-native grasslands, with smaller patches of native grasslands imbedded within. The fringes of this planning segment are mostly coastal sage scrub. Oak woodlands, riparian areas, eucalyptus woodland, vernal pools, and alkali playas are scattered throughout the planning segment.

Sensitive species – This area is crucial for the conservation of vernal pool and grassland species including San Diego fairy shrimp, Stephens' kangaroo rat, Burrowing owl Golden eagle, Ferruginous hawk, and several other raptor species. There is also a population of San Diego thornmint. Arroyo toads are present along Santa Maria Creek (west of Rangeland Road). Stephens' kangaroo rats are found around the Ramona Airport and on Oak Country open space areas. Since 2000, Tricolored blackbird, Grasshopper sparrow, and Burrowing owl have all been observed in the grasslands. California gnatcatchers occur in low to moderate densities in coastal sage scrub in the north. Vernal pools in the area support many sensitive species, including sensitive plants (e.g., *Navarretia fossalis* and *Myosurus minimus*), breeding populations of western spadefoot toad, and two invertebrate species (San

Diego fairy shrimp and Riverside fairy shrimp; cysts of the latter were recently (ca. 2007) discovered near the Ramona Airport). Alkali playas support Coulter's saltbush and Parish brittle scale.

Restoration opportunities – High priority areas include Santa Maria Creek for Arroyo toad, areas with potential to support native grasslands, vernal pools, or Stephens' kangaroo rat, and breeding sites for Burrowing owl.

Land use – Mostly rural and natural land. The Ramona Airport is also a prominent use in the area. Large areas are used by the Ramona Municipal Water District for evaporation of treated effluent (i.e., sprayfields) and grazing is practiced to the west of the airport. Several large development projects, such as Oak Country, Montecito, Cumming Ranch, and Montecito Ranch (a hardline project), are currently proposed in this planning segment, each with a significant amount of open space. Grazing in grassland areas is expected to continue and may assist in maintaining ecosystem functions. Other agriculture includes dry farming for oat hay, which can support native species dependent on grasslands.

Parcelization – Small parcels are most common in the linkage southeast of Highway 67. There are several residences in the PAMA along Highland Valley Road.

Roads – Highway 67, Highland Valley Road, and Montecito Road are the main roads in this area. There is also a road proposed in association with the Montecito Ranch project (SA330) that will run north-south along the eastern edge of the planning unit.

Other – Areas owned or leased by the Ramona Municipal Water District and operated as sprayfields are likely to remain as open space. However, the County may not have the ability to affect land use changes there. This planning unit is a first priority acquisition area.

Conservation Goals

- Protect the following sensitive species: San Diego thornmint, California gnatcatcher, and Burrowing owl.
- Minimize impacts to the following sensitive habitats: Alkali playas, vernal pools (including their watersheds), and grasslands, including those that are loamy (known to support Stephens' kangaroo rat and raptors) or with clay soil (known to support San Diego thornmint).
- Protect rock outcrops in grasslands utilized by sensitive species, such as raptors.
- Protect riparian and upland habitat along Santa Maria Creek for water quality and sensitive species such as: Arroyo toad, Southwestern pond turtle, and Tricolored blackbird.
- Removal of invasive, non-native species to ensure long-term persistence of native alkali playa plant species, loamy grasslands, clay-soil grasslands, vernal pools, and habitat quality along the Santa Maria Creek corridor.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals, songbirds, and raptors between preserved habitats and preserves to the southeast, across Highway 67.

8.14 San Pasqual Valley Core (14)

Area Description

Location – This core area consists of 1,469 acres between Ramona and San Pasqual Valley, mainly along the northern outskirts of the Ramona Grasslands core area.

Watershed – San Dieguito.

Existing preserves – Davis-Eagle Ranch and scattered private open space easements, many on privately-owned lots.

Adjacent natural areas – Ramona grasslands to the south, San Pasqual Valley to the north, CNF to the east, and, to a limited extent, Santa Ysabel Creek and Pamo Valley to the north.

Natural vegetation communities – 1,089 acres (74%) of this core area contain natural vegetation communities. The dominant community type is chaparral along north-facing slopes of San Pasqual Valley.

Sensitive species – Scattered Engelmann oaks have been observed. California gnatcatchers are expected to occur here in limited numbers.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for California gnatcatchers, as well as restoring disturbed fragments in large contiguous patches of natural habitat.

Land use – Agriculture and rural residential with some natural areas. Agriculture mostly consists of hillside groves. The largest groves in this planning unit were recently approved in 2007 for a residential development project (Teyssier), which will likely limit opportunities for north-south wildlife movement through that area.

Parcelization – There are many small parcels near Highway 78 and eastward. Extensive parcelization in this area will make it difficult to achieve significant amounts of conservation since the County has limited ability to determine locations of single-family homes on existing lots.

Roads – Highway 78.

Conservation Goals

- Limit light pollution to create dark night skies for nocturnal wildlife movement.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between preserved areas in the San Pasqual Valley and the Ramona grasslands

8.15 Eastern Ramona Core (15)

Area Description

Location – This core area consists of 18,966 acres east of downtown Ramona, south of Lake Southerland, including lands east of the Barona Reservation.

Watershed – About half in San Dieguito and half in San Diego.

Existing preserves – County preserves, including the Mount Gower and Simon preserves, a portion of the El Capitan preserve. Scattered private open space easements. BLM also owns land in the center of the planning segment, between Hatfield Creek and Highway 78.

- Adjacent natural areas – CNF to the north near Lake Sutherland. Additional CNF land and El Capitan preserve to the south. These areas also connect to preserved area around San Vicente Reservoir. Another important natural linkage is from Simon Preserve to Barnett Ranch (in the South County MSCP Subarea, which ultimately links to the preserved area around San Vicente Reservoir).
- Natural vegetation communities – 17,175 acres (74%) of this core area contain natural vegetation communities. The southern half, near the Barona Reservation, is mostly chaparral while the northern half is composed of a mix of coastal sage scrub, chaparral, oak woodland, and grassland.
- Sensitive species – Mafic soils occur around Highway 78 in scattered locations. San Diego thornmint and Orcutt's brodiaea are recorded on Simon Preserve. Engelmann oak is common in this area. Parry's tetracoccus is found at several locations on preserved lands. California gnatcatchers are found at a few locations, especially Simon Preserve. There are several sightings of Grasshopper sparrow and least Bell's vireo in this planning unit. There is also potential for Stephens' kangaroo rat to occur in the grassland areas.
- Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as restoring disturbed oak woodlands (especially Engelmann oak woodlands).
- Land use – Mostly rural, agricultural and natural lands. Large ranchettes occur in the northern half. Agriculture includes pastures, orchards, egg ranches, stables, and numerous agricultural ponds. San Diego Country Estates is a dense urban area in the middle of this rural landscape; it impairs north-south connectivity, but does not fully preclude the assembly of a viable preserve system in this area as some limited areas remain for north-south connectivity.
- Parcelization – Small parcels exist throughout the planning unit, mainly concentrated around Highway 78, adjacent to the core development of downtown Ramona, and near San Diego Country Estates.
- Roads – Highway 78.
- Other – The Barona Reservation is a significant area of largely natural land in this planning unit, but is not under County control. Areas supporting Engelmann oak woodlands in this planning unit are second priority acquisition areas.

Conservation Goals

- Protect the following sensitive species: Oak woodlands, San Diego thornmint, and Orcutt's brodiaea.
- Minimize impacts to the following sensitive habitats: Upland habitat on mafic soils supporting sensitive plant species, such as Parry's tetracoccus (particularly in the western half of the planning unit); grasslands, including those that are loamy (known to support Stephens' kangaroo rat, Grasshopper sparrow, or large numbers of raptors) or with clay soil (known to support San Diego thornmint); California gnatcatcher habitat.
- Protect the Escondido Creek floodplain. Conserve riparian and upland habitat along Escondido Creek for water quality and sensitive species such as: Southwestern pond turtles and tricolored blackbirds. Maintain natural flow regimes to maintain functionality of the San Elijo Lagoon.

- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between preserved habitats along Escondido Creek canyon and the Hatfield Creek drainage (a tributary to Santa Maria Creek) by minimizing road crossings and maintaining natural habitat. Along Escondido Creek canyon, the corridor should span the canyon, rim to rim.
- Link future preserves to create a large contiguous preserve area and maximize contiguity with the CNF.

SPECIAL AREAS

8.16 San Elijo – Rancho Santa Fe Coastal Areas (16)

Area Description

Location – This special area consists of 1,855 acres near Rancho Santa Fe. Also includes County-owned areas along the coast in incorporated cities, mainly Magdalena-Ecke Park and Palomar Airport

Watershed – Carlsbad and San Dieguito.

Existing preserves – Magdalena Ecke Open Space Park, San Elijo Lagoon Ecological Reserve, Tchang Open Space Preserve, and Escondido Creek Conservancy and County-owned land along Escondido Creek. There are also a small number of open space easements protecting southern maritime chaparral on privately-owned lands.

Adjacent natural areas –San Elijo Ecological Reserve is connected via Escondido Creek to other inland natural areas. Carlsbad Highlands Ecological Reserve to the north of Palomar Airport. Magdalena Ecke has a limited natural connection to Bataquitos lagoon through Encinitas.

Natural vegetation communities – 1,241 acres (67%) of this area contain natural vegetation communities. This area contains the only southern maritime chaparral in the Plan area, which occurs mainly in isolated pockets. Riparian and other wetland habitats occur along Escondido Creek and San Elijo Lagoon. Also present are patches of coastal sage scrub and chaparral.

Sensitive species – Rare plants include Del Mar Manzanita, Encinitas baccharis, Wart-stem lilac, San Diego barrel cactus, San Diego thornmint (east of Palomar Airport), Spineshrub, and a core population of Nuttall's scrub oak. Sensitive bird species include California gnatcatcher and least Bell's vireo.

Restoration opportunities – High priorities include disturbed southern maritime chaparral and native grasslands and disturbed patches of habitat surrounding San Elijo Lagoon. The management plan for San Elijo Lagoon Ecological Reserve may identify other restoration priorities within the Reserve.

Land use – Semi-rural lands. There are scattered eucalyptus and citrus groves, which are part of the semi-rural landscape. Little commercial agriculture occurs here. Expansion of Palomar Airport is proposed as a hardline project (Appendix E).

Parcelization – Most private lands in this planning segment consist of relatively small parcels (under 10 acres). This will make it difficult to achieve significant amounts of conservation, since there is minimal opportunity to configure the location of

new single-family homes on existing lots in such a manner that promotes conservation.

Roads – Roads and houses dissect the landscape and cross wetlands in several locations.

Other – Small open space easements on private property are likely the most likely option to conserve much of the southern maritime chaparral on private land. Most of the existing southern maritime chaparral exists in patches smaller than 20 acres and connections and connectivity between patches is minimal. Approximately 57 acres of southern maritime chaparral occur within San Dieguito County Park, which should not be impacted by future residential development. San Elijo Lagoon Ecological Reserve is owned and cooperatively managed by the County, State of California, and San Elijo Lagoon Conservancy. This reserve will be operated under existing management plans; therefore, additional goals are not provided below. The portion of the reserve that is within the Plan area includes: coastal sage scrub, riparian forest, alkali marsh, coastal saltmarsh, freshwater marsh, and estuarine communities. Numerous sensitive species occur in San Elijo Lagoon, which is the only such available habitat for many of these species within the Plan area.

Conservation Goals

- Minimize impacts to the following sensitive habitats: Southern maritime chaparral.
- Protect the following sensitive species: Del Mar manzanita, San Diego thornmint (particularly east of Palomar Airport), Encinitas baccharis, including different genders to ensuring reproductive capability.
- Conserve cliff-faces utilized by sensitive species, such as raptors, swallows, and bats.
- Protect the Escondido Creek floodplain, including riparian and upland habitat of Escondido Creek and its tributaries for water quality and to protect least Bell's vireo.
- Removal of invasive, non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, crayfish, bull frogs, etc.), particularly to enhance habitat quality along Escondido Creek.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals along Escondido Creek East-west by minimizing road crossings and maintaining natural riparian habitat. Along Escondido Creek canyon, the corridor should span the canyon, rim to rim, as much as possible.
- Link future preserves to create a large contiguous preserve area and maximize connectivity to San Elijo Ecological Reserve.

8.17 Downtown Ramona Vernal Pool Complex (17)

Area Description

Location – This special area consists of 3,528 acres in downtown Ramona.

Watershed – San Dieguito.

Existing preserves – Few areas are preserved here, although there are open space easements on private lots to protect existing vernal pools. These include two lots on Kalbaugh and La Brea Streets, around a vernal pool containing San Diego

button-celery, and another near Kalbaugh and Taub Streets, containing a population of San Diego fairy shrimp. The site north of Ramona High School is also likely to have some preservation, but its participation in this plan is not required.

Adjacent natural areas – There are limited opportunities for connectivity in this area. The main goal in these areas is to ensure access by pollinators. There are some potential natural connections into the downtown area along Etcheverry and Santa Maria Creeks and their tributaries. Most of the sites along Main Street are within about one mile of natural habitats of the Ramona Grasslands.

Natural vegetation communities – 241 acres (7%) of this area contain natural vegetation communities. This section applies mainly to vernal pools within an urban landscape. Historically, the majority of Ramona vernal pools occurred on Placentia soils. These are now represented mainly by remaining pools in the downtown area and about 20 pools south of Ramona Airport. Many of the Placentia-soil vernal pools were historically associated with mima mound topography (alternating hummocks and depressions), as seen in historical aerial photographs. However, the majority of the vernal pools preserved in Ramona occur in swale-type areas or on different soil types, such as Fallbrook- or Bonsall-series sandy loams. It is currently estimated that of the 50 to 70 low quality vernal pools remaining in the downtown area, 40 to 50 would likely be impacted and require some type of off-site mitigation. Non-native grassland or disturbed habitats most commonly surround these vernal pools.

Sensitive species – Rare plants include San Diego button-celery, and possibly Little mousetail and Spreading navarretia. There are two invertebrates associated with these vernal pools, San Diego fairy shrimp and Riverside fairy shrimp (cysts of the latter were recently (ca. 2007) discovered near the Ramona Airport). Western spadefoot toads are also often associated with vernal pools.

Restoration opportunities – The management and conservation strategy is to restore 20 to 30 acres of vernal pool habitat in this area that provide similar functions and values (e.g., represent pools on Placentia soils) to the vernal pools in this planning unit.

Land use – This is mostly an urban landscape, within rural areas on outskirts of town as well as small farms and ranches.

Parcelization – Most of the remaining vernal pools occur on very small parcels (0.5 – 2 acres). This will make it difficult to achieve significant amounts of conservation in these areas since there is minimal opportunity to determine locations of new single-family homes or commercial buildings on existing lots.

Roads – There is an extensive network of paved and dirt roads throughout this area.

Other – Impacts occurring from foot traffic, weeds, and other human activities are continually occurring in remaining vernal pools in the downtown area.

Conservation Goals

- Restore and enhance vernal pools (including restoration) and associated sensitive species, such as San Diego fairy shrimp, Riverside fairy shrimp, Western spadefoot toad, Little mousetail, San Diego button-celery, and Spreading navarretia (including salvage from impact sites and introduction to enhance preserved vernal pools).
- Protect mima mound topography by minimizing future grading in the area.

- Ensure that pollinator species have access to vernal pools.
- Removal of invasive, non-native species to enhance habitat quality, particularly within vernal pool habitats.

LINKAGES

8.18 Escondido - Temecula Linkage (18)

Area Description

Location – This linkage consists of 9,036 acres along Interstate 15, from Highway 76 in the south to the community of Rainbow in the north. The Jesmond Dene area and a small patch of coastal sage scrub with prickly pear cacti near the intersection of Bear Valley Road and San Pasqual Valley Road are also located within the planning segment.

Watershed – San Luis Rey, Carlsbad, and San Dieguito.

Existing preserves – The Pala Mesa Highlands mitigation bank. There is also open space planned as part of the Pasarelle and Meadowood hardline projects and several open space easements on the southern end, each consisting of about 30-60 acres.

Adjacent natural areas – Primarily connects natural areas in Escondido to Riverside County, and secondarily connects other natural areas such as Moosa Canyon, San Luis Rey River, and Pala Core area.

Natural vegetation communities – 5,988 acres (66%) of this area contain natural vegetation communities composed of coastal sage scrub, with interspersed patches of chaparral. There are some riparian forests/woodlands along Rainbow Creek and Horse Ranch Creek.

Sensitive species – This is a north-south linkage, mainly for California gnatcatchers and other coastal sage scrub-dependent birds known to inhabit patches of habitat along Interstate 15. Other sensitive species documented in this area include Engelmann oaks, Parry's tetracoccus, and San Diego cactus wren.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for San Diego cactus wren and California gnatcatcher or that improve refugia for these species or facilitate their movement.

Land use – This area is dominated by the interstate right-of-ways and semi-rural lands, interspersed with commercial zones. There are also a number of areas where the landscape is dominated by agriculture (mainly avocado groves), such as along Stewart Canyon. There is also a large area of pasture land northeast of Highway 76 and Interstate 15 where three hardline development projects – Campus Park, Campus Park West, and Meadowood – are being planned, in addition to a new community college campus. The current and planned uses significantly constrain this linkage for exploitation other than habitat connectivity and occasional live-in habitat for the coastal sage scrub dependent birds. Steep slopes in many areas within this linkage will limit future development.

Parcelization – Many small parcels (less than 10 acres) occur along the ridge above Lawrence Welk Resort and along Interstate 15. This will limit connectivity in this area, as there is minimal opportunity to determine locations of future single-family homes on existing lots.

Roads – Interstate 15, Old Highway 395, and Highway 76 all pass through this planning unit, as well as several other roads crossing these freeways.

Other – Rainbow Creek area has little natural habitat except adjacent to the creek. Habitat that contains Cactus wren populations is a first priority for acquisition.

Conservation Goals

- Minimize impacts to the following sensitive habitats: Oak woodlands, including isolated oak trees, occupied San Diego cactus wren habitat, Coastal sage scrub (particularly on privately-owned land) to minimize fragmentation and enhance habitat to facilitate occupation, breeding, and dispersal of California gnatcatcher.
- Revegetation and restoration with coastal sage scrub species of disturbed areas to maintain habitat conditions conducive to California gnatcatcher.
- Minimize impacts to riparian and upland habitats along Rainbow Creek and its primary tributaries for water quality and sensitive species.
- Facilitate wildlife movement through the use of freeway under- or over-crossings. Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals, California gnatcatchers and other sensitive species.

8.19 Lower San Luis Rey River Linkage (19)

Area Description

Location – This linkage consists of 5,633 acres along the San Luis Rey River and west of Interstate 15.

Watershed – San Luis Rey.

Existing preserves – Rincon mitigation area and open space easements near Interstate 15 around a mobile home community. There are also large open space easements in the San Luis Rey River area, including to the south of the river by Dentro de Lomas (about 40 acres).

Adjacent natural areas – Very important east-west connection, joining coastal habitats to inland areas, such as Palomar Mountain.

Natural vegetation communities – 3,579 acres (64%) of this area contain natural vegetation communities. Riparian vegetation occupies the river flood plain, with patches of coastal sage scrub, grassland, and chaparral on slopes above.

Sensitive species – Several sensitive species depend on riparian habitats here, including least Bell's vireo, Southwestern willow flycatcher, Arroyo toad, San Diego ambrosia, Yellow-breasted chat, White-faced ibis, and Osprey (occasionally seen at Guajome Lake). California gnatcatchers occupy larger patches of coastal sage scrub. San Diego cactus wren has also been observed in this area.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as activities that promote natural hydrologic regimes and restore disturbed patches in the San Luis Rey River floodplain.

Land use – The floodplain is mostly natural land, with the exception of a golf course and some agricultural use (equestrian, field crops, orchards, etc). The upland areas are mainly semi-rural lands. Expansion of some recreational facilities at Guajome

Regional Park is planned as a hardline project. Expansion of Highway 76 is currently being planned along the length of the planning unit.

Parcelization – Small parcels are mostly north of 76 and at the southern end of this planning unit. This will limit connectivity in this area, as there is minimal opportunity to determine locations of new single-family homes on existing lots in a manner that promotes connectivity.

Roads – Highway 76 runs through this planning unit, mainly along the northern portion. Larger arterial roads include Gird Road, South Mission Road, and Olive Hill Road Bridge, which crosses the San Luis Rey River. North Santa Fe Avenue also crosses Guajome Park in Oceanside.

Other – Factors that may limit conservation opportunities include: the existing urban setting of the area; planned expansion of Highway 76 (which has been accounted for in the analysis of this plan); active recreational use of parks associated with the San Luis Rey River Park, which will be offset by the open space contributed to the area; and cowbirds (a non-native species) associated with horse ranches in the area. Areas supporting significant Arroyo toad or San Diego cactus wren populations are first priority acquisition areas, while lands supporting critical movement corridor functions here are a second priority for public acquisitions.

Conservation Goals

- Protect the following sensitive species: San Diego ambrosia (including salvage and transplantation to preserve areas).
- Minimize impacts to the following sensitive habitats: occupied San Diego cactus wren habitat, coastal sage scrub habitat important to the California gnatcatcher, Arroyo toad and Western spadefoot toad habitat (particularly for aestivation), including existing agricultural areas with upland habitat and pastures.
- Decrease mortality of Arroyo toad (and other herpetofauna) through installation of movement barriers on the south side of Highway 76 (which lacks undercrossings) to funnel movement to suitable areas.
- Maintain riparian and upland habitat along the San Luis Rey River for water quality and Rainbow/Steelhead trout, Pacific lamprey, Southwestern pond turtle, least Bell's vireo, Southwestern willow flycatcher, Arroyo toad, San Diego ambrosia, Yellow-breasted chat, Tricolored blackbird, and White-faced ibis.
- Removal of invasive, non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, crayfish, bull frogs, etc.) to enhance habitat quality.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between agricultural lands of the San Luis Rey River and hill region to the south of the San Luis Rey River, near Interstate 15.

8.20 Upper San Luis Rey River Linkage (20)

Area Description

Location – This linkage consists of 6,839 acres along the San Luis Rey River between the Pala Reservation and Hellhole Canyon Open Space Preserve.

Watershed – San Luis Rey.

Existing preserves – Wilderness Gardens.

- Adjacent natural areas – Important east-west connection, including a natural land connection to Palomar Mountain.
- Natural vegetation communities – 3,760 acres (55%) of this area contain natural vegetation communities, mostly riparian and coastal sage scrub with some patches of chaparral and oak woodlands.
- Sensitive species – Engelmann oak, Parry's tetracoccus, Harbison's dun skipper, Arroyo toad, and California gnatcatcher.
- Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as activities that promote natural hydrologic regimes and restore disturbed patches in the San Luis Rey River floodplain. Establishing or restoring populations of host plants for Harbison's dun skipper in this area would help establish new populations and strengthen existing populations.
- Land use – The existing floodway is largely natural, except for some areas where it is channelized or runs through a golf course. The surrounding area is mostly rural residential and commercial agriculture, with orchards on steeper slopes and citrus groves and nurseries in the valley area along the San Luis Rey River.
- Parcelization – Most of the smaller parcels occur in two areas – around the golf course on the east end and north of Highway 76 along Adams Drive. This will limit connectivity in this area since there is minimal opportunity to determine the locations of future single-family homes on existing lots.
- Roads – Highway 76 is the main road through this area and forms much of the northern border of the PAMA along the San Luis Rey River.
- Other – As the County does not have the ability to ensure connectivity of natural habitats onto or through tribal reservation, these areas remain of unknown conservation value. Pauma Creek, which is the main connection to Palomar Mountain, is highly channelized and much of the area in which it flows was recently purchased by the Pala Reservation. Areas supporting significant Arroyo toad populations here are first priority acquisition areas. Lands supporting critical corridor functions or linkages to Palomar Mountain are a second priority for acquisitions.

Conservation Goals

- Minimize impacts to the following sensitive habitats: Coastal sage scrub habitat important to the California gnatcatcher, Arroyo toad and Western spadefoot toad (especially south of Highway 76) habitat (particularly for aestivation), including existing agricultural areas with upland habitat and pastures.
- Decrease mortality of Arroyo toad (and other herpetofauna) through installation of movement barriers on the south side of Highway 76 (which lacks undercrossings) to direct movement to more suitable areas.
- Minimize impacts to the San Luis Rey River floodplain, particularly south of the river and around Wilderness Gardens Open Space Preserve. Maintain riparian and upland habitat along the San Luis Rey River for water quality and to protect Rainbow/Steelhead trout, Pacific lamprey, Southwestern pond turtle, least Bell's vireo, Southwestern willow flycatcher, Arroyo toad, San Diego ambrosia, Yellow-breasted chat, Tricolored blackbird, and White-faced ibis.

- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals between San Luis Rey River and Palomar Mountain.
- Removal of invasive, non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, crayfish, bull frogs, etc.) to enhance habitat quality.
- Minimize impacts to Wilderness Gardens Open Space Preserve area to retain high integrity watershed function. .

8.21 Keys Creek Linkage (21)

Area Description

Location – This linkage consists of 4,627 acres mostly along Keys Creek from Valley Center, through Lilac, and ending at San Luis Rey River.

Watershed – San Luis Rey.

Existing preserves – No existing open space is known in this linkage. Open space is proposed as part of the hardline Lilac Ranch project.

Adjacent natural areas – Lake Wohlford to the south and San Luis Rey River to the north.

Natural vegetation communities – 3,347 acres (72%) of this area contain natural vegetation communities. Mostly riparian vegetation surrounded by coastal sage scrub, chaparral, grassland (on Lilac Ranch), and agriculture.

Sensitive species – California gnatcatcher is the main sensitive species documented in this linkage.

Restoration opportunities – Activities that improve opportunities for wildlife movement and enhance refugia are priorities in this area.

Land use – Main constraint is around Valley Center Road and Lilac Road, due to existing commercial and residential areas. Most of this area consists of semi-rural land use, although there are more rural uses in the northern half. Agriculture is mostly small operations of orchards, grazing, small ranches, and some nursery operations and citrus groves. One hardline project, Rancho Lilac, is being planned in this area.

Parcelization – In the southern half of the planning unit, there are many small parcels (less than 10 acres), which will limit connectivity in the area since there is minimal opportunity to determine locations of new single-family homes on existing lots. The northern half of the planning unit has a few small parcels, including several around Lilac Ranch, which are mostly associated with smaller agricultural operations.

Roads – Valley Center Road and Lilac Road are the main roads through this area.

Other – This corridor does not follow stream courses for its length, as an upland connection is present between the north and south fork of Keys Creek. The County does not have direct control over lands owned by the Valley Center Municipal Water District in this linkage.

Conservation Goals

- Minimize impacts to the following sensitive habitats: Coastal sage scrub habitat to maintain California gnatcatcher, Harbison's dun skipper habitat, including host plants (e.g., *Carex spissa*).
- Minimize impacts to the Keys Creek floodplain. Maintain riparian and upland habitat along Keys Creek for water quality and to protect the least Bell's vireo and Western spadefoot toad.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals, small to medium terrestrial species, and riparian birds, and upland birds, along riparian areas.
- Facilitate wildlife movement through use of undercrossings and directional fencing.
- Removal of invasive, non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, crayfish, bull frogs, etc.) to enhance habitat quality.
- Link future preserves to create a large contiguous preserve area.

8.22 Moosa Canyon Linkage (22)

Area Description

Location – This linkage consists of 9,660 acres starting south of Lilac Road in Bonsall and ending at edge of the San Luis Rey watershed in Valley Center.

Watershed – Mostly San Luis Rey, but also some in Carlsbad.

Existing preserves – Scattered open space easements (e.g., Circle R Ranch to be owned by the County). Open space proposed associated with the Paradigm Development hardline project.

Adjacent natural areas – Important connection to protected lands in the MHCP (i.e., Daley Ranch) and Daley Ranch - Lake Wohlford core area.

Natural vegetation communities – 6,895 acres (71%) of this area contain natural vegetation communities. Large blocks of chaparral and coastal sage scrub. Mostly chaparral and oak woodlands on the east end, with more grasslands and coastal sage scrub toward the west end.

Sensitive species – Engelmann oak (especially on the east end); Harbison's dun skipper; Southwestern pond turtle (observations in the vicinity); and California gnatcatcher.

Restoration opportunities – Priorities include restoration of areas that would provide habitat for sensitive species that inhabit the segment, as well as activities that improve opportunities for wildlife movement and enhance refugia. Establishing or restoring populations of host plants for Harbison's dun skipper in this area would help establish new populations and strengthen existing populations.

Land use – Near the San Luis Rey River, the landscape in the PAMA is semi-rural, with small patches of natural habitat. The direct connection of Moosa Canyon Creek to the San Luis Rey River flows through a golf course. To the east, through Bonsall, there are several equestrian operations in the middle of the linkage. East of Interstate 15, the landscape becomes more rural with fewer intrusions, such as isolated houses, orchards, and golf courses, which surround the creek at two points. East of Turner Lake, the landscape becomes more semi-rural, with several

plant nurseries and orchards. New subdivisions and existing development around Valley Center create significant obstacles to creating an ideal linkage in this area. One hardline project, Paradigm Development, is being planned in this area.

Parcelization – There are smaller parcels throughout this linkage, with particularly high concentrations at either end, particularly in Bonsall, where the linkage meets the Lower San Luis Rey Linkage, and in Valley Center, where the linkage goes around a village core area. This will limit connectivity since there is minimal opportunity to determine locations of new single-family homes on existing lots.

Roads – Several roads dissect this linkage, most notable Interstate 15. Other major roads crossing the linkage include Woods Valley Road, Valley Center Road, Lilac Road, Betsworth Road, Gopher Canyon Road, and Old Highway 395.

Other – Turner Lake and surrounding land is owned by the Valley Center Municipal Water District and occupies an area in the middle of this linkage. Particularly as the County does not have control over lands owned by the Valley Center Municipal Water District, future projects here may affect this linkage. Lands supporting critical corridor functions within this linkage are a second priority for public acquisitions.

Conservation Goals

- Protect the following sensitive species and habitats: Engelmann oaks, Oak woodlands. Harbison's dun skippers, including host plants (e.g., *Carex spissa*) and habitat, Southwestern pond turtle and habitat, western spadefoot toad and habitat, including existing agricultural areas with upland habitat and pastures for aestivation.
- Conserve cliff-faces and rock outcrops utilized by sensitive species, such as raptors, swallows, and bats.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals. Particularly north-south, for California gnatcatcher through coastal sage scrub patches along Interstate 15; between Moosa Creek and Daley Ranch in Escondido.
- Minimize impacts to riparian and upland habitat along Moosa Creek for water quality and to protect the Southwestern pond turtle, least Bell's vireo, and Western spadefoot toad.
- Removal of invasive, non-native species (e.g., *Tamarix*, *Arundo*, brown-headed cowbirds, crayfish, bull frogs, etc.) to enhance habitat quality.

8.23 Ramona – Blue Sky Linkage (23)

Area Description

Location – This linkage consists of 1,757 acres between Ramona Grasslands and Poway. Watershed – San Dieguito.

Existing preserves – Private open space easements totaling less than 100 acres.

Adjacent natural areas – Ramona Grasslands core area to the east, Lake Poway and a portion of Blue Sky Ecological Reserve connected to the southeast, and private land immediately to the west connects to San Dieguito River Park.

Natural vegetation communities – 998 acres (57%) of this area contain natural vegetation communities. Dominated mostly by coastal sage scrub and chaparral with some oak woodlands in canyons.

Sensitive species – None known.

Restoration opportunities – Priorities include activities that improve opportunities for wildlife movement and enhance refugia.

Land use – Rural lands with several large orchards, which limit the amount of contiguous natural, relatively undisturbed land.

Parcelization – Small parcels with existing homes occur throughout this linkage. There are also several small vacant parcels that may further constrain this linkage as residential development occurs. However, this can still function as a secondary linkage for wildlife species, particularly birds, between Ramona and Poway.

Roads – Several small private roads exist in this area, but are not expected to greatly affect movement of most species. The main road that may constrain wildlife movement in this area is Highland Valley Road.

Other – Lake Ramona and its surrounding lands are owned by the Ramona Municipal Water District, occupying part of this linkage, although future projects would not be under County's land use control.

Conservation Goals

- Protect the following sensitive species and habitats: Oak woodlands, including isolated oak trees.
- Maintain connectivity through natural and agricultural lands for wildlife movement of large and medium sized mammals, urban adapted mammals, and avian species, between the Ramona Grasslands and preserves in Poway.
- Minimize impacts to riparian and upland habitat along all stream courses for water quality and to protect sensitive species.

REFERENCES

- California Native Plant Society. 2005. Vegetation Rapid Assessment Protocol. Accessed December 7, 2007 from <http://www.cnps.org/cnps/vegetation>.
- Center for Natural Lands Management. 2001. Adaptive management and monitoring program for the Coachella Valley Multiple Species Habitat Conservation Plan and Natural Community Conservation Program (Draft). The Center for Natural Lands Management; 425 East Alvarado, Suite H, Fallbrook, CA 92028.
- Conservation Biology Institute. 2003. Wildlife Corridor Study: San Diego Multiple Species Conservation Program. Prepared by the Conservation Biology Institute for the California Department of Fish and Game.
- Conservation Biology Institute. 2004. Framework Management and Monitoring Plan: Ramona Grasslands Preserve, San Diego County California.
- Conservation Biology Institute. 2007. Area specific management directives for the Ramona Grasslands Preserve; San Diego County. Prepared by the Conservation Biology Institute for the County of San Diego Department of Parks and Recreation.
- County of San Diego. 1996. San Elijo Lagoon area enhancement plan. County of San Diego Department of Parks and Recreation
- County of San Diego. 2000. Policy Number C-30: Use of native plants in park development Projects. County of San Diego Department of Parks and Recreation.
- County of San Diego. 2009. Fire, Defensible Space, and You. Online brochure. Accessed 2/5/2009 at: http://www.sdcountry.ca.gov/dplu/fire_resistant.html
- Deutschman D.H., L.H. Hierl, J. Franklin, and H.M. Regan. 2007. Vegetation community monitoring recommendations for the San Diego Multiple Species Conservation Program (Draft). Prepared by San Diego State University Department of Biology for the California Department of Fish and Game.
- Hathaway, S., R. Fisher, C. Rochester, C. Haas, M. Mendelsohn, G. Turschak, D. Stokes, M. Madden-Smith, E. Ervin, K. Pease, and C. Brown. 2004. Baseline biodiversity survey for the Santa Ysabel Ranch Open Space Preserve. USGS Technical Report. Prepared for The Nature Conservancy and the San Diego County Department of Parks and Recreation.
- McEachern K., B. Pavlik, J. Rebman, and R. Sutter. 2006. San Diego Multiple Species Conservation Program (MSCP) rare plant monitoring review and revision (Draft). Prepared by the United States Geological Survey for the City of San Diego.
- Multiple Species Conservation Program (MSCP). 1998. Final Multiple Species Conservation Program, MSCP Plan.
- SANDAG. 2003. Multiple Habitat Conservation Program. San Diego Association of Governments, San Diego, California.
- TAIC and EDAW. 2005. Ramona vernal pool conservation study, Ramona California. Prepared by TAIC and EDAW for the County of San Diego.
- Welker, S. and R. Patton. 1993. San Elijo Ecological Reserve biological element for master plan /management plan. Prepared for the County of San Diego Department of Parks and Recreation.